

A PROCEDURAL DISCOURSE GENERATION
MODEL FOR 'TWENTY QUESTIONS'

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ABSTRACT

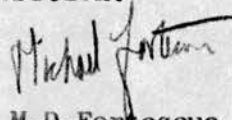
A model is presented for the interactive generation of discourse in a clearly defined area of verbal behaviour (of interest in its own right) in procedural rather than purely descriptive terms. It is built up from an examination of the relation between form and function in the recorded data (fairly informal games of 'Twenty Questions' in English and three other contrasting languages) for evidence of -and justification for - the some sixty discrete discourse acts involved. The latter are then treated as complex input-output processing units called 'demons' operating within context formalizations termed 'frames'. The relationship between this procedural approach and descriptive discourse analysis and speech act theory is continually assessed. This discourse component is subsequently integrated with components dealing with sentence generation and game strategies to produce a complete model (incorporating syntax, semantics and pragmatics) whose operation is illustrated diagrammatically for selected games. It is compared with a simplified but working program for Twenty Questions, and an attempt is made to test some of the rules embodied in the model. The methodology behind the thesis is a synthesis of approaches from Artificial Intelligence and Cognitive Psychology as well as from within Linguistics itself. The belief is that such an integrative project is a step towards a theory of context-specific Pragmatics meaningful to all three disciplines.

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DECLARATION

This thesis is my own work and composition.



M.D.Fortescue

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Introduction

The present work is an attempt to build up a plausible model of the linguistic and psychological processes behind the behaviour exhibited by speaker-hearers in a specific discourse situation. Although it is in principle difficult to model such intentional behaviour accurately for typically free conversational dialogue, it is possible to approach objectivity by choosing a domain of discourse so defined by rules that the motivation behind individual utterances is maximally transparent. 'Twenty Questions' has been chosen as such a domain, of interest in its own right.

This widely known game is played by two players - the questioner and the answerer. The latter thinks of a particular object (or, in the laboratory recording session, is given it on a slip of paper) and states whether it is 'animal, mineral or vegetable'. The questioner then has a maximum of twenty yes/no questions ('game questions') - to which the answerer must reply - in order to guess what the object is. This alternation of questions and answers constitutes the basic structure of the game. The answerer is obliged to reply 'yes' or 'no' if he can, though in practice there is much 'hedging' of answers, and 'clues' can be given if the questioner appears to be in difficulty. Exchanges concerning the count or the 'legality' of a question (or clarity of an answer), etc., are also liable to occur at any point. The function (communicative purpose) of any utterance within the game context is generally quite clear - the two most common being, obviously, 'game question' and 'answer'. Other common functions of utterances within the game can be given similarly transparent labels, e.g. 'request rephrase', 'object', 'request confirmation', or 'prompt'; such functions I shall call 'discourse acts'. Although the choice of a fixed set of such labeled units does require - due to overlap and differing level of generalization - more objective criteria than this intuitive classification (these are discussed in the first two chapters), it presents no particular problem for analysis. Where matters do become more complex is in relating such functions to specific linguistic form. This traditional linguistic problem is central to the present model, claiming as it does to reflect the processes whereby the actual utterances in the recorded games were produced and not stopping short at the point of modelling the bare intentions to produce such and such a type of utterance. The model purports to explain how the hearer recognizes the function intended by any such utterance (as well as how the speaker chooses to formulate it as he does), and this recognition clearly must in some sense come via its form, the arrangement of words of which it consists. This is simple enough in cases where form and function correspond

in a direct fashion(e.g. when a game question is formulated in interrogative form:'Is it the Queen?'),but where they don't(e.g. a game question in declarative form:'It's the Queen').Further considerations become crucial.

Functions such as those mentioned above have traditionally been discussed within linguistics(and the philosophy of language) in terms of 'speech acts'.Austin,whose 1962 volume can be said to have initiated this line of inquiry in its modern form,distinguished between what he termed the 'illocutionary' and the 'perlocutionary' aspects of the function of utterances.By the former(what he called an 'illocutionary act') he meant the function conventionally performed 'in' producing an utterance type by virtue of its linguistic form -e.g. asking a question or making a statement.A 'perlocutionary act',on the other hand,was what one might perform 'by' producing an utterance - as a secondary effect upon the hearer less directly dependant upon any particular linguistic form,e.g. convincing or annoying him.¹Following his lead,such philosophers as Grice, Strawson and Searle have all concentrated exclusively on the illocutionary aspect of the function of sentence-length utterances,either formulating the notion in terms of speakers' communicative intentions(conveyed via conventional linguistic forms) or,in the case of Searle,whose seminal book on speech acts(1969) first welded a complete coherent theory in this field, in terms of 'felicity conditions' adhering to individual functional acts. These defining features of speech acts are divided into 'essential' conditions,whereby utterances of a certain formal type are taken to 'count as' such and such a conventional act;'propositional content' conditions constraining the content of utterances performing the act;and 'sincerity' and 'preparatory' conditions concerning such matters as the belief states and wishes of the participants and the current feasibility of the act.Searle defines these conditions for a handful of basic speech acts such as 'Question','State','Request' and 'Command'.The felicity conditions for the first of these,for example,are:(1)the utterance must count as a question(essential);(2)the speaker doesn't know the answer already and it is not obvious to both speaker and hearer that he will provide the information of his own accord at that time(preparatory);and (3) the speaker wants the information (sincerity);there is no constraint on the propositional content.

In effect,however,such speech acts are context-free abstractions(free from any particular context within an ongoing discourse),and in analysing

¹Both kinds of act can be intentional,note;the distinction has never been defined in a fully satisfactory manner.I take it that the crucial point is their differing relationship to linguistic form.

actual sequential discourse the situation is not so straightforward, since one soon comes upon dozens, if not hundreds, of distinct functions, none of which is as clearly linked to a particular linguistic form as, say, Searle's 'Question' act is to interrogative syntactic form. Recognition of the force (intended function) of such acts would seem to depend much more on propositional content and expected response sequences within the given discourse context - such as the expectation of a suitable answer following a game question in Twenty Questions. For this reason, the emphasis in the present context-specific model is on the perlocutionary effect on the hearer of individual discourse acts, these latter being complex communicative functions embodying both illocutionary and perlocutionary aspects. Illocutionary force is taken to be a special case of perlocutionary force where there is a definite relation between the function of the utterance and the linguistic form(s) realizing it. Such a case would be the discourse act of 'Request Information' (corresponding to Searle's 'Question'), which is typically expressed by an interrogative utterance (e.g. 'Is that ten or eleven?'), as opposed to that labeled 'Give Help', which can be realized in a wide variety of form types, including such utterances as 'What else is made of paper?' and 'It's part of a human being'.

Whereas Chapter One addresses the question of deriving rules from the data to relate discourse acts such as 'Game Question' (distinguished from 'Request Information' by specific propositional content constraints and the additional consequence of increasing the game count by one) with linguistic forms realizing them, Chapter Two is concerned with 'response sequence' rules between these acts. These prove to be crucial (along with propositional content) in justifying a categorization of discourse acts for the data. Thus one finds, besides the basic question-answer sequence for the game, such typical sequences (where the first act sets up the expectation for the second) as 'Request Rephrase' → 'Rephrase':

α: Is it something like an electricity pylon?

β: What do you mean 'like an electricity pylon'?

α: Is it an electricity pylon?

Or 'Offer Help' → 'Accept Help':

α: Should I give you a clue now?

β: Yes please.

This leads naturally to the consideration (in Chapter Three) of indirect realizations of a discourse act by forms typically associated with other functions. I have already mentioned the common case in the data where a game question is realized by a declarative form. Clearly contextual expectation

(that a new game question is going to follow an answer to the preceding one) plus appropriate propositional content renders initial recognition by the hearer of the utterance as an illocutionary 'State' act superfluous. As an example of a linguistically 'remote' discourse act which is typically realized indirectly, consider the following exchange, where β (the answerer) performs a 'Give Help' act at the indicated point:¹

- α : George IV Bridge?
 $\rightarrow \beta$: No! What's it made of?
 α : The Forth Bridge?
 β : The Forth Rail Bridge.

Due once again to the model's incorporation of contextual expectations it will be found that many of the steps that Searle for instance (1975) regards as necessary for the hearer of such utterances to go through in order to calculate their 'primary' (intended) force can be bypassed. Though a distinction between direct and indirect realizations of discourse acts is certainly required in the model, the line is drawn in a somewhat different fashion than it is by Searle. Thus game questions in declarative form and requests in the form of modal interrogatives ('Could you...', 'May I...', etc.) are treated as direct realizations of the acts in question. The realization rules for the model's discourse acts include only the most conventional formulae associated with the acts: recognition of the force of more indirect realizations has to draw upon local context in the game and general conversational principles, such as Grice's maxim of 'relevance', whereby the hearer can expect the speaker's utterance to be relevant to the current situation. This approach allows us furthermore to unravel commonly occurring 'blends', in which one utterance can be seen to realize more than one discourse act at a time.

The game of Twenty Questions as described above constitutes a definite discourse context with a recognizable structure. Recognition by a discourse participant that this context pertains to the ongoing dialogue will obviously simplify the processing he has to do on his interlocutor's utterances to determine their force. The question now arises as to how to formalize and integrate this contextual knowledge into the model. Existing techniques of discourse analysis can be brought to bear in describing the structure of typical games, but the problem is somewhat different if one wishes to construct a model that purports to show how such games could actually be produced by two interacting speaker-hearers. In particular, it is found (in

¹ The questioner knows the object is all metal, which is presumably not the case with the first named bridge.

Chapter Four) that the application of a hierarchical analysis in the manner of Sinclair and Coulthard(1975), although adequate for games artificially constrained to simple question-answer chains, accounts for the actual games in the data rather poorly. This is because the recorded dialogues exhibit considerably less structure than such an analysis (based on a controlled classroom situation) presupposes. What structure they do display, apart from the central game question-answer sequence, is best described in terms of response sequences between particular couples (or triples) of discourse acts. These can cut right across the pattern of alternating game questions and answers, as can be seen in the following 'excursion' inserted between a 'recap' by the questioner and his next game question:¹

α: You said mammal, you said found in Britain... Is that three? Four?

β: Three, I think. No. I asked if it was alive also - so that was the fourth-

α: That was the first one - so we've had four.

β: We've had four... The fifth one, then, would be: is it a domestic animal?

Such excursions concerned with the current game count can be initiated by either player, and it is not possible to relate all utterances in such a situation produced by one player to his basic game function of guessing or answering. It is for similar reasons found impossible to describe the generation of games in the data in a tree-like fashion from a single highest node in the manner of a 'text grammar'. The central question-answer exchange pattern of the game can indeed be treated as a 'macrostructure', to use Van Dijk's term (1972), but generation of actual games of Twenty Questions seems clearly to involve the complex interaction of a number of components (including individually 'activated' discourse act sequences), not all of which are hierarchically organized.

The solution that is adopted for formalizing the Twenty Questions context is in terms of what I call 'frames'. This expression has been variously used within Artificial Intelligence since Minsky's 1975 article as a label for world knowledge representations ranging from the semantics of individual English predicates to detailed action scenarios - e.g. for what one typically 'does' in a restaurant. What these have in common with my own use of the term - and also with Goffman's sociological use of it (1974) - is the representation of common situation types, knowledge of which must be involved in the interpretation of utterances produced by participants in those situations. Generally, frames (or 'scenarios', or 'scripts') within Artificial Intelligence consist of lists representing the most expected sequence of events within that context - e.g., in the restaurant case, the following items: entering, sitting down, ordering, eating, paying and leaving. In this linearity

¹ α is the answerer, trying to determine the count at that point.

they differ from the frame structure I suggest for Twenty Questions: while the core of the game can be captured by a linear sequence of two alternating discourse acts - which I term the 'Game Frame' -, the more inclusive structure I call the 'Metaframe' for the game is much more loosely constituted. This contains the Game Frame as well as 'slots' for a variety of other exchange types common in the Twenty Questions context (e.g. requesting a rephrase, giving help or determining the count). It represents the players' knowledge of expected speech events within that context relevant to their monitoring of the ongoing game and determining the force behind the other player's utterances. Further, it acts as a 'control structure' for the production of their own behaviour during the game. The reason why such a structure is necessary on the model (apart from the psychological plausibility of human beings having representations of common interactional contexts) can be stated in procedural terms - i.e. in terms of theoretical computer simulation - : it simplifies the processing necessary on the hearer's part to calculate the likely force of any utterance that doesn't fit the expected Game Frame move. Rather than sifting through dozens of general discourse acts known to him to find one which the utterance concerned fits, he can check first just those discourse acts in the Metaframe that he knows to be relevant to Twenty Questions. He need only revert to a more lengthy analysis (in terms of conversational principles and local context) when the utterance doesn't match at once as a conventional realization of those acts.

The model is intended to be 'procedural' in the sense of representing real-time performance processes rather than an abstract 'competence'; the discourse acts (and their sequences) indicated in the Metaframe are subsequently treated in Chapter Five as processing modules termed 'demons'. These have their own activating conditions and output actions and are akin to - but not identical with - the entities of that name within Artificial Intelligence. The term, as used originally by Charniak in this context (1972), refers to a data structure (e.g. for children's parties) which is activated by 'recognition' in a text of one element of the structure (e.g. the word 'party'), causing expectations to be set up for the rest of it (e.g. presents, paper hats, etc.). In as far as recognizing an utterance as a realization of a particular discourse act sets up the expectation of a permissible response sequence following it, this is analogous to the function of the demons on the present model: they are embodiments of the discourse act intentions derived from the data on linguistic grounds (distributional, formal and functional). Diagrammatical representations of a variety of 'excursions' beyond the question-answer core of the game are presented in terms of frames and demons to conclude the essentially linguistic first part of the thesis.

What the full performance model 'looks like' then, as diagrammatically portrayed in Chapter Six (which initiates the second part of the thesis), is not a unitary rule list capable of describing the 'grammar' of Twenty Questions exhaustively, but an assembly of interrelated components consisting of sets of linguistic rules, procedural flow diagrams and the demons and frames discussed above. It is the complex interaction of these components - syntactic, semantic and pragmatic - that generates utterances corresponding to those of the data. Each diagram (one for each utterance produced by the questioner and answerer alternately) represents the minimal cognitive activity on the speaker-hearer's part that could account for his production of the utterance in question - i.e. what he must somehow know or do in order to produce it. The procedural 'flow' (abstracting away from any parallel processing) proceeds from analysis by the speaker-hearer concerned of the last utterance received and leads through the demon-and-frame system, which is activated in such a way as to produce an appropriate utterance-in-response in conjunction with specific linguistic rules summoned by the generation process.

Although the model as diagrammed is essentially algorithmic (i.e. will automatically produce well-formed sequences of utterances), it is clear that real games are by no means so mechanical. Consequently there is included in the model one component which is highly 'heuristic': it searches for a solution of its particular goal by flexible 'trial and error'. This goal is to decide on a suitable next game question. An examination of the data shows (as discussed in Chapter Seven) that players typically apply a mixture of three major strategy types in playing the game. These are: a 'top-down' strategy dividing the current search set - the class of game object candidates as defined by the properties known at that point - by approximately two (thus 'Is it female?' following a positive answer to 'Is it human?'); a 'bottom-up' strategy making an intuitive leap to a possible candidate and asking a question relevant to that hypothesis (e.g. 'Is it the Queen?' following a hedged, uncertain answer to 'Is she involved in politics?'); and a 'useful question type' strategy whereby a type of question known to be generally useful in the game (concerning, for instance, profession or nationality for a human 'object') is asked at a suitable point. Broad world knowledge and experience with the game is obviously involved here, but all three strategy types have been incorporated into the model in at least a general manner.

The data on which the model is based is principally in English, but games in Russian, Japanese and Eskimo were also recorded. This was in order to show just what in the model was universal and what was language-specific (as considered in Chapter Eight). In general, it can be seen that the components and

processes as modelled for English are perfectly adequate for modelling games in the other three languages, which were chosen to display as wide a range of language types as possible. What is dependant on the particular language used, besides the syntactic rules concerned, is the semantic scope of the predicates, arguments and modifiers of the propositions stored and processed on the model, as can be seen from the effect these (with their language-specific connotations) have on the choice of succeeding game questions. They are consequently represented as language-specific word-senses rather than as more universal concepts.

Finally, the question of testing the model must be raised, for if it could not predict further tokens of Twenty Questions behaviour (i.e. not be falsifiable) it would be open to the charge of being merely an ad hoc reflection of a handful of particular games. There are two approaches here, apart from the theoretical considerations applicable to all cognitive models - namely maximal generality and overall simplicity, coherence and plausibility. The first approach is psychological: since no attempt has been made to model detailed processes lying beyond the production of overt discourse acts, it is reasonable to limit the testing to that observable level, and this is what has been done in the experiment described in Chapter Nine for eliciting fresh data in order to validate some of the realization rules derived from the initial data. Secondly, the testing serves to indicate that my own intuitions as to 'what is going on' in the data do not diverge significantly from those of other observers. On the other hand, in order to justify the whole procedural approach behind the thesis it must be demonstrated that at least the core of the model - the Game Frame with its maximum of twenty question-answer exchanges - is simulatable on the computer. For this purpose a simplified version of the game has been implemented as an interactive program (the computer taking the part of the questioner), and this is discussed in Chapter Nine in relation to actual human games. In theory the entire model, with the Metaframe and the demons it contains, is simulatable - it is intended to be fully generative in the real-time systems sense.¹ The basis on which this would have to build would be a 'core' much like that implemented in the existing program.

Underlying the thesis as a whole is the belief that the two approaches to discourse it attempts to integrate - that of text-based linguistic generalization-seeking and that of 'intentional' system-modelling for computer simulation - are mutually illuminating and necessary for a coherent and empirically grounded interdisciplinary theory of pragmatics to approach the stage of explanatory adequacy.

¹ This presupposes the ability of the system to analyse all well-formed game utterances as well as to produce them.

-Part One-

Chapter 1

In the present chapter we shall be concerned with the complex many-to-many relationship between form and function exhibited by interrogative forms in the data. The first step will be to examine the various forms that the major sub-class of all polar questions found -namely 'game questions' - can take there, attempting to determine any functional 'delicacy' adhering to particular forms. Conclusions as to the force of the act involved will be drawn following an examination of the different functions performed by polar interrogatives elsewhere in the data.

A preliminary matter which must be clarified is what exactly is meant here by 'form'. As a first approximation we shall define the polar interrogative form as that of an utterance type exhibiting either interrogative syntactic order (i.e., for English, having the constituent structure auxiliary verb plus noun phrase plus verb and/or complement) or interrogative intonation (some kind of terminal rise symbolized by '?'), or both. Examples will be discussed that fulfil neither of these criteria but are nevertheless understood as 'game questions' in context; this phenomenon will be attributable in part to contextual expectations and in part to propositional content.¹ Constraints on the latter can be characterized as follows: to count as a 'game question' a polar interrogative must (a) refer directly or indirectly to the unknown object (or some property of it or class to which it belongs), and (b) presuppose an answer that can be seen, in a broad sense, to help the questioner towards his goal of guessing what the object is.

The game question types presented below are not absolutely mutually exclusive, as one utterance may sometimes combine elements of more than one type. But a distinct type has been postulated wherever at least two exemplars of a form were encountered containing a single formal marker that distinguished it from 'basic' type (a) when the presence of that marker could be related to a distinct 'propositional attitude' (or discou-
rsal context) on the part of the speaker. Debated or disguised game questions, though mentioned tangentially, are not included - nor are non-polar questions that the answerer let pass. A few examples of each type are given, plus pre-theoretical comments; precise contexts can be found

¹ Constraints on propositional content will also be treated as within the domain of 'form'.

in the Appendix under the game number indicated.

(a) Interrogative syntax plus interrogative intonation (the 'basic' form)

Game 3: 'Is it female?'

Game 3: 'Does it have two legs?'

Game 49: 'Is the vegetable some kind of plant?'

This is the most wide-spread form fulfilling the (printed) instructions to ask only yes/no questions. There would appear to be no constraints on when it can be employed: all and any game question could have been asked this way. There is also a version of this form with what appears to be declarative intonation, giving a more peremptory or 'distanced' effect, as if the questioner is less in doubt about the answer, but this is largely a personal stylistic matter, a plane on which there are various more subtle modulations of the 'basic' intonation of interrogatives which cannot be treated here.

(b) Declarative syntax plus interrogative intonation

Game 33: 'It contains things which might belong to individuals?'

Game 4: 'It's a form of mass media or something?'

Game 4: 'They partially enter it?'

This form is more commonly elided as in (d), but is occasionally found either following a hint or suggestion from the answerer, as in the first Game 4 example (thus having something in common with the 'inferencing' form (h) below), or in a context where it immediately follows a question plus negative answer of analogous propositional content (e.g. about the content of the object in the Game 33 example). In the second example from Game 4 both conditions apply: the previous question was 'Do people enter it?' and the answer was 'Not exactly' (a hedge which is also a hint). Moreover, in this example, it is not clear whether the question was in fact counted as a game question (the players were lax about keeping count in this game), though it could certainly be seen as an attempt to get further useful information from the answerer. This does not mean it was necessarily a conscious trick on the part of the questioner; she might simply have responded 'automatically' to an unclear answer by a request for expansion/clarification (an act we shall come across later), forgetting that she was running the risk of having it count as a further game question.

These examples serve to point out the difficulties that arise in trying to assign precise discoursal (and cognitive) conditioning features to particular forms within a functional set. At this level of

delicacy¹ there would appear to be a number of such conditions occurring in a given context, some competing for different forms of realization (e.g. snappy versus hesitant performance), others cooperating for the production of the same form (e.g. repetition of analogous propositional content and snappy performance both leading to elided forms). Resolution often seems to be effected by some kind of blending of forms. In particular there appears to be a continual competition between 'basic' form (a) (related directly to the game rules) and other forms evoked by more general - and subtle - discourse factors of propositional attitude, etc. The question of multiple speech act functions borne by one utterance will be returned to in Chapter 3.

(c) Declarative syntax plus declarative intonation

Game 3: 'It's a man.'

Game 18: 'It's the railway one.'

As with (b) above this form is much rarer than its corresponding elided form since the discursual factors conditioning its use overlap with the latter: both forms are found in 'snappy' sequences of questions and answers. This form also appears to be used when the questioner is particularly sure of his hypothesis - it is less tentative than corresponding questions with interrogative intonation (thus, in the Game 3 example the questioner knows that the object must be one of two bridges only). But such 'sureness' may also be relatable to personality factors and subsequent stylistic preferences on the questioner's part. What is interesting is how such utterances - questions in the form of statements - are recognized as such by the hearer. Clearly his expectation of a question in that discourse 'slot' plus the propositional content of the utterance overrides its formal features; i.e. interrogative marking is rendered redundant in such contexts.

(d) Elided versions of (a), (b), or (c)

G.4: 'An instrument?'

G.3: 'Or the acting profession in general?'

G.39: 'Human animal?'

G.31: 'A particular person in the department.'

G.31: 'Male?'

G.23: 'Nose?'

¹ i.e. the more specific function(s) performed by utterances of a certain form within a larger functional set (Halliday's term)

Forms such as the above are found widely throughout the data, and the conditions attending their appearance are readily statable: if the syntactic form of (a) - or (b) or (c) - was used in at least the most recent preceding question (which is nearly always the case), without the intervention of 'excursion' sequences, an elided form can always be used for the next question (and any subsequent ones presupposing the same elided material). This is particularly likely in rapidly moving, 'snappy' games or episodes of games. The only constraint appears to be that the first question of a game is not usually elided - unless it follows immediately the answerer's statement of 'animal, mineral or vegetable', as in the Game 39 example. The elided material will typically include a form of the verb 'be' plus an expression referring to the unknown object (e.g. 'Is it -'). What is left will be the 'new' material: the property or class assignment of the object being asked about. Even the article may be dropped from a noun phrase - as in the Game 23 example - when delivery is particularly rapid. Sometimes it is a somewhat more complex structure that is presupposed (not repeated) as in the Game 3 example, where 'Is it somebody connected with the cinema?' has just been asked and answered in the negative. That the actually uttered 'new' material in this case is meant to replace the object of the predicate 'connected with', rather than the entire complement of 'Is it -', is clear from the propositional content of the second, elided question: its referent, the unknown object, is known by the questioner to be a person, and the answerer knows that the questioner knows that. A major factor conditioning the choice of these forms is presumably economy of effort - in as far as they are not entirely predictable from preceding context.

(e) Modal versions of (a)

G.33: 'Would it contain something which I own?'

G.4: 'Would the function be related to what happens in this building?'

G.33: 'Can it be a cigarette packet?'

The modal element appears to add an element of tentativeness to the question. 'Would' is more common than 'can' in this function; the latter, being potentially ambiguous, has the additional interpretation (albeit unlikely in this context) of asking whether such an object is allowed by the rules as a possible game object. The form with 'would' may also simply be a stylistic alternate to (a), one much used by panel members in the broadcast version of the game.

(f) Negative versions of (b),(c) or (d)

G.27: 'It's not Waverley Station by any chance?'

G.4: 'It's not an atomic bomb?'

G.49: 'It's not a kind of hpie?'

The negation in this form is not, strictly speaking, part of the propositional content of the question (it could be omitted and the same propositional content conveyed). As in (e) it marks a distinct attitude on the part of the speaker, suggesting that the hypothesis being asked about is rather tentative or unlikely on the face of it (it may be a 'shot in the dark'), or that the speaker thinks he has suddenly intuited the answer and that this presumed solution is unlikely or surprising. The implication may be (as in Game 49 where the questioner is decidedly frustrated) that the presumed solution, the game object, is an unfairly difficult one to guess and therefore that he cannot be blamed for taking so long to get it. The answerer in turn may feel obliged to supply a more elaborate answer than a simple 'no' if the guess is wrong - in Game 27 this is in the form of a clue. That the questioner is having difficulty is clear both from context and from his intonation. The 'tentative' marker 'by any chance' is not used in such cases.

(g) Tag questions

G.27: 'It's not the Forth Bridge, is it?'

G.32: 'It's the old one, is it?'

This form is not particularly common in the positive, presumably because its primary function - that of checking/asking confirmation - presupposes that the questioner has access to/has been given already the information contained in the proposition, in which case the utterance wouldn't count as a game question anyway. In the Game 32 example the utterance probably wasn't counted as one in fact, since the questioner had just been told that the object was 'the other one' (not the new bridge); but, strictly speaking, the questioner must actually name the object even if it could logically only be one thing and thus it could have been counted as a game question. Negative versions as in the Game 27 example (with positive tag) are simply extensions of form (f), the tag stressing the attitudinal nature of the question (tentativeness, unlikeliness, etc.). This form is more common in the data in attitudinally modulated comments, or for checking on the course of the game.

(h) Questions in the form of inferences

G.41: 'So it's not an art form.'

G.35: 'So it's something that comes from an animal, not an animal itself?'

G.33: 'So it's not a Smarties packet.'

G.31: 'It can only be the Queen, then?'

This form is marked by 'inferential' conjunctions such as 'so' and 'then'. It is often used - consciously or unconsciously - by the questioner for 'pivot' questions ambiguous as to whether they constitute a real game question or merely a case of 'thinking out loud', drawing a conclusion from the answerer's last reply. These 'inferences' are most commonly in the negative, suggesting the cognitive process of narrowing down the search set by ruling out successive candidates (see Chapter 7). The cases we are dealing with here are clearly not examples of strict logical entailment (as, for example, the conclusion 'It's a woman then' following 'It's human' and 'Is it a man' → 'No' in Game 42 is), otherwise the possibility of the utterances being taken as game questions would not arise. Throughout the data 'natural logic' is being deployed primarily in a mode of 'plausible deduction' rather than of strict (syllagistic) inference. Thus in the Game 31 example the questioner knows only that the object is female, English, a public figure known by virtue of 'what they are', and is not a writer, entertainer or politician. The intuitional leap to 'the Queen' can in no way be explicated in terms of logical entailment, but is still expressed in the verbal form of an inference. The speaker draws his conclusion from - at least - his general knowledge of (a) famous English women now living and (b) likely candidate objects for 'Twenty Questions'. In this case there can be no question of the speaker 'talking to himself': the intonation and volume of the utterance is not that of a monologue, and the propositional content is such as to elicit information that will clearly further him towards the goal of the game. But in the Game 33 example it is debatable, as in one sense the question can be seen as eliciting useful new information ('packet' as opposed to 'box') despite the answerer's prior utterance 'It doesn't contain food', which would appear to rule out the possibility of it being a 'Smarties packet'. A jocular argument did indeed develop about this point. Not all utterances of this form serve the same function. Thus in Game 18 the question 'So is it flat?' is asked by the answerer to disambiguate the questioner's last question; the inference concerns the questioner's intentions rather than the propositional content of the question.

(i) 'What about' interrogatives

G.41: 'What about a sculpture of some sort?'

G.15: 'What about plastic?'

Note that this form still constitutes a polar question, despite the Wh- pronoun. It makes a tentative suggestion as to a candidate object (or class) fulfilling the conditions the questioner has just been considering. Thus it is found in the context of 'thinking out loud', especially if a list of possible candidates is being considered (as in Game 15), or of a clue (Game 41). More like a 'special appeal' for further help than a strict game question, it presupposes a friendly, helpful answerer.

(j) 'Meta-questions'

G.3: 'Is it a particular person you have in mind?'

G.4: 'We're referring to a system?'

G.2: 'So you're thinking of a specific piece of rock or whatever?'

G.33: 'Do you have plastic in mind?'

This indirect way of asking a game question seems largely a stylistic variant, but it may also be used, in conjunction with appropriate intonation, in order to elicit more information out of the answerer than a simple 'yes/no', by appealing to him to reveal something of his own attitude/cognitive relationship to the game object. This form is not found in the data in successive questions, nor is it used to make a final guess as to the game object (as the last question of a game).

(k) Expanded questions

G.4: 'Does that mean only one person is able to use it?'

G.39: 'By that you mean does not appear regularly on TV?'

G.15: 'That is, is it made up of different sorts of vegetable matter?'

G.40: 'I mean is it decorative?'

These are not simple game questions but combine that function with rephrasing the questioner's previous question or with asking confirmation for the questioner's interpretation/expansion of the answerer's previous answer (as in the first two examples). They are game questions since they are attempts to elicit new useful information beyond what has been supplied in the previous exchange. These forms are found, then, either immediately following a question-answer exchange whose semantic content is close to their own, the reply having been ambiguous or unsatisfactory in some way to the questioner, or following a question of similar content which the questioner immediately reformulates without waiting for an answer. The initiation of the reformulation may come from the answerer (as in Game 40), who requests a rephrase before answering the original question. The game question is usually embedded in a higher clause with the verb 'mean' (or contains some other 'reformulation' marker such as

'that is').

Having looked at various forms in which the function 'game question' is realized in the data, we must ask again what it is that all of them have in common in order for them to be recognized and counted as such. For if one were to be 'micro-functional' about one's criteria for distinguishing speech acts it could be argued that we are dealing here with some ten or eleven distinct acts - albeit related by some kind of 'family resemblance' - , since each form can be shown to relate to slightly different attitudes/complex intentions/stylistic functions on the part of the speaker. Going to the other extreme one could relate them (and many others not performing the function 'game question' at all) to some general speech act category such as 'asking a question', pointing out that they all meet certain felicity conditions, the most basic of which is that they all 'count as an attempt to elicit information from the hearer' (as Searle proposes). But given that some of the forms listed above would not meet that criterion outside of the particular context we are examining¹ (and that not all 'questions' count as 'game questions'), such a generalization is not particularly useful here. What all the utterances concerned clearly do have in common is 'counting as a game question', i.e. on the discourse level they all fall into the 'question move' slot of the question-answer exchange pattern basic to the game (and as such 'expect' certain responses which shall be discussed presently). It is this plus their propositional content that renders them game questions clearly pursuant to the goal of the game rather than the particular syntactic/intonational forms in which they are couched. We can nevertheless attempt to characterize the options open to the native speaker of English for 'realizing' (in the Hallidayan sense) this act, which could perhaps be labelled 'Guess', since on the discourse level (that on which we shall be defining our acts) it is an attempt to elicit (dis-)confirmation of successive hypotheses towards the goal of guessing the game object. The single arrow in the schema below is to be read as 'realized by'. The optional forms contained in the vertical brace are not marked for functional 'delicacy' or for contextual conditioning factors (these being too overlapping and complicated by stylistic considerations to be easily summarized here). STATE and ASKIF refer to declarative and interrogative syntax respectively. 'Meta-questions' and 'expanded ques-

¹For example, an utterance with declarative syntax and intonation does not 'count as an attempt to elicit information' except in very specific contexts.

tions' are not indicated, nor are 'inferential' markers and elided forms (these are either the result of 'blends', to be described in Chapter 5, or are handled by discourse-level rules, as in Chapter 6). '↗' indicates a terminal rise¹; 'modal' and non-propositional 'neg' are treated as separate from propositional content 'p', which is reserved for first-order predicates and arguments.

Game Question → { ASKIFp ±modal ±neg ±↗
STATEp ±modal ±neg ±tag ±↗
'What about' + NP

In other words, any utterance by the questioner (the person taking that role in a game) of the above form(s), with a propositional content relevant to the furthering of the questioner towards his goal of guessing the game object, is a potential game question and can as such cause one to be added to the game count.

We turn now to functions other than asking a game question performed by interrogative forms in the data; following this we shall be better able to discuss our criteria for treating 'Game Question' as a distinct discursual act. The listing below represents an initial, intuitive classification without regard for hierarchical level or overlap of function or for the distinction between 'illocutionary' and 'perlocutionary' acts for the time being.

(a) Request Information

G.40: 'Did you say it was functional or pretty?'²

G.12: 'Is this a red herring?'

G.42: 'You been keeping count?'

G.49: 'Do you want to switch it off and carry on guessing?'

This act is the most general from the point of view of use outside the 'Twenty Questions' context and can be said, in a sense, to include 'Game Question' within its scope. But it is here introduced to account for cases of questions in the data that do not fall under one of the more specific acts listed. Its relationship to the latter (and their 'illocutionary force') will be dealt with later in this chapter. A great

¹ Intonation in the data is of considerable complexity - and interesting - but has not been fully analysed. In general, 'typical' intonation patterns are taken to adhere to the output of particular acts.

² Not strictly a polar question, of course

many 'Wh-questions' in the data (such as 'Which question are you asking?' in Game 34 and 'How many did you get it in?' in Game 37, as well as a variety of forms asking about the game count) also fall under this category.

(b) Request Confirmation

G.11: 'That's about ten, isn't it?'

G.42: 'Are you sure I've never met this person?'

G.41: 'Didn't you say it was not a construction?'

This act is performed most commonly by a tag-question. The propositional content of such utterances must consist of information that the utterer has some reason to believe (e.g. by having been told it earlier) but is not certain about, whereas he believes the addressee is probably in a position to (dis-)confirm it. It is because of this condition that this act (or game questions couched in a form associated with it) can be used as a 'pivot' for acquiring 'free' game information: the questioner can pretend to know the truth value of the proposition he is asking about already (merely requiring confirmation of it), while actually its content extends somewhat further than what he has in fact been told by the answerer. There is some degree of overlap with (c) and (d) below (an utterance can perform at least two of these acts simultaneously).

(c) Request Expansion/Rephrase

G.34: 'Would you like to develop that?'

G.27: 'Can you rephrase that question?'

G.40: 'You mean do I think it's pretty?'

This act commonly takes the form of a (polite) modal request, specifically mentioning the response desired, or it can be a more indirect suggestion, such as in Game 40, where a possible expansion/interpretation is tentatively proffered.

(d) Express Surprise/Disbelief

G.41: 'Very solid?'

G.36: 'It's in this room?'

G.41: 'There's only one in the world?'

This act can easily be recognized by its echoing of the utterance that caused the emotional reaction and by its distinct intonation (usually high tone throughout plus high rise at end).

(e) Give Help/Clue

G.40: 'The bridge like this: (gesture) ? Or that one: (gesture) ?'

This act is usually realized by Wh-questions, e.g.:

G.41: 'What's it made of?'

G.49: 'What do you bake normally?'

This and the following two acts are related to the general cognitive function of 'helping', which will be discussed later in this chapter. The relationship between this functional intention and linguistic forms realizing it is particularly tenuous and indirect.

(f) Offer Help/Clue

G.41: 'Do you want another clue?'

G.21: 'Would you like a hint?'

G.28: '(I'll be giving you a clue next question.) Can I give it to you now?'

These utterances generally enquire about the addressee's wants or request permission to do something, using a modal verb (cf. under (k)).

(g) Request Help/Clue

G.31: 'Oh, is there a useful subdivision I can make? (or do I just have to ask names? I can't really think of one.)'

G.32: 'Am I better off looking for the things that belong to an individual?'

Utterances such as these can be regarded as a special case of (a) above. In fact many utterances classed primarily under (a), (b), or (c) can be seen to perform this function indirectly (see Chapter 3).

(h) Object

G.27: 'Well, wasn't it in the first place?'

Usually this act is realized by Wh-questions (or by statements), e.g.:

G.12: 'Why did someone make it if not to be useful or decorative?'

There is usually a distinctive - querulous - intonation pattern adhering to this act, to some degree overlapping with that for (d) above.

(i) Rhetorical Questions

G.4: 'In Edinburgh?'

G.14: 'To anyone else besides the person using it?'

Wh-questions are more common here too:

G.16: 'What else have I got above my waist?'

G.36: 'I mean, what could you say?'

There is some overlap here with (d) and (j) - and possibly even with (g). These utterances are of two kinds: those which exemplify 'thinking out loud' (usually with 'sotto voce' intonation and volume) as in the Game 16 example, and those definitely audience-addressed, serving some higher cognitive function (such as (j) below in the Game 36 example). The

latter tend to have a distinctive intonation pattern(e.g. high rise nucleus on a Wh-question) and not be followed by a pause long enough for the addressee to supply his own answer in. An anomaly is produced by questions apparently intended as game questions - or requests for confirmation(as in the Game 4 example) - but immediately answered by the questioner himself, rendering it rhetorical in retrospect. Polar questions serving this function are not common during the game itself since a strict answerer can always claim that such a question, if its answer furthered the questioner towards his game goal, counted as a game question even if spoken in a low voice.

(j) Blame Self

G.36: 'Do you think I should have given you more help?'

G.36: 'Were my answers misleading?'

This function is found only in 'post mortem' discussions after the game itself is terminated; the answerer is politely taking some of the blame for the questioner's poor performance. Like for (e) there is no direct relationship between this 'higher' cognitive function and the various linguistic means of expressing it available.

(k) Request Permission

G.20: 'Can I give up?'

G.21: 'Can I have that question back?'

G.28: 'Do I have to answer that question?'

Commonly this act is marked by a modal verb plus a first person pronoun (and indication of the action desired), though it can be less direct, as in Game 28, where permission is requested not to have to answer a difficult question. These examples can all be seen as 'jocular' in as far as they are 'out of place' in the game context: they refer to actions the questioners know they must (not) do according to the rules. 'Jokes', being parasitic upon ordinary speech acts, are not here treated as a separate function.

(l) Signal Intent

G.3: 'May I just recap.'

G.27: 'Can I recap?'

This act is often performed by an utterance of form similar to those under (k), though with falling terminal intonation; the action referred to must be one the speaker intends immediately carrying out. An even more common form is the utterance type 'Let me - '(plus action intended).

In listing these functional types a certain amount of 'overlap' has

been in evidence. Can our discrete classification still be justified, even though various markers and constraints on propositional content are shared by several acts? Clearly the basis for the classification cannot lie in function or formal elements alone. There are two related problems here: (1) that of hierarchical level (both in the sense of generalized acts subsuming more specific ones, and of 'higher' cognitive acts that can utilize more closely 'linguistic' ones in their realization) and (2) that of specific criteria for distinguishing one act from another. Solution of the first will lead to solution of the second.

Of the acts listed above, (e) and (j) in particular appear to belong to a different plane altogether from the others: they are quite remote from particular linguistic realizations. This can be accounted for if we accept that such higher cognitive functions can find realization through a variety of lower-level ones (more directly tied to the linguistic system), much as in flexible modern computer programs a routine can 'summon' another as a sub-routine and in turn be summoned as a sub-routine in some other procedure (the principle of 'heterarchical' structure). We are forced nevertheless to identify them as distinct acts like the others if we are to account for the ability of the hearer to trace back the intention behind the utterance in question to the speaker's ultimate reason for uttering it (and understanding the 'reason' behind such an utterance is necessary if the hearer is to respond appropriately¹).

But what of act type (a)? This looks very like Searle's general speech act 'Question' (Searle, 1969), which in turn can, as mentioned earlier, be seen to embrace at least one other of our acts, namely 'Game Question'. Could not all of the acts listed be regarded as bearers of either of the two basic illocutionary forces here of 'Question' and 'Request'? In an abstract, sentence-meaning sense this may be the case, but in terms of discourse, where distinct acts have distinct interactive consequences, we shall find that illocutionary force (the conventional pragmatic force of an utterance, such as stating, asking, requesting) is not a sufficient criterion for distinguishing distinct acts on the discourse level. In what follows I shall concentrate on the illocutionary act of 'Question', since for 'Request' it is easier to see the need for distinguishing

¹ Though of course he may not recognize this intention, and respond as if it were a lower-level act, in which case he has failed to understand the utterance fully. Of course not all higher cognitive acts are performed with the intention of the hearer recognizing them as such.

separate acts depending on what the request is for¹; whether all the acts we are here concerned with can usefully be regarded as sharing the illocutionary force of a 'directive' (according to Searle's more recent taxonomy) will be considered in Chapter 3.

If act (a) in our list is indeed Searle's basic 'Question' speech act, how is the 'essential condition' of that act - concerning 'what counts as a question' - relevant to our present classificatory purposes? The point I wish to argue for is that 'counting as' is a vacuous concept for purposes of discourse modelling of the acts we are concerned with (though possibly not for such acts as 'promising', involving socially imposed commitment). From this point of view 'illocutionary force' is best treated simply as the neutral or unmarked function of, for example, the interrogative form - i.e. is a term belonging to the description of the language system rather than to that of the functions of language in a particular social context. In fact, in dealing with the force of indirect speech acts (Searle, 1975), Searle does himself avoid (except in a brief recapitulation of his earlier felicity conditions) the notion of essential condition, as Myers (1977) points out - an inevitable consequence, it seems to me, of shifting the emphasis from language system to pragmatic considerations of how speech acts are recognized by hearers. Naturally there are conventional forms through which a speech act is performed in a given language, but, as Strawson points out (1971), this is not always the case, and even when it is, the form may not be enough to disambiguate the force of a given utterance.

When Searle states that the essential condition for a Question is that it 'count as a question' (in the language system) he means something more than that conventional linguistic means are available to express it (as he replies to Strawson in the same volume). Now surely the expression 'counts as' presupposes some purpose which the 'counting as' serves. Thus in the case of a Game Question it is clear that 'counting as' this act has the important consequence of adding one to the game count. It is also clear that in making a promise (a speech act Searle relies on heavily - as in Searle 1971 - when illustrating what he means by the phrase in question) an utterance 'counting as' such an act has

¹ And there is, arguably, no one grammatical form whose most neutral function is that of requesting in general (as opposed to commands and statements, etc.; see below).

the consequence of committing the utterer to some future course of action. But what would be the consequence of an utterance being recognized by a hearer as 'counting as' a Question? The answer to this must surely be in terms of the hearer's recognition of possible responses to it (corresponding to the effect on him desired by the utterer), unless one merely wants to say that it 'counts as' a Question in the sense that the hearer recognizes the utterance as a token of the conventional linguistic form whose 'neutral' function is the expression of a 'Question' - which, I take it, is what Searle claims he is not saying. 'Essential condition' and 'function' seem to be synonymous, or at least circularly related. When discussing discourse, rules concerned with 'counting as' would appear to be redundant, since all that is required for a discursive act to be performed successfully is recognition on the part of the hearer of the speaker's (perlocutionary) intention to produce a certain effect in him via recognition of the conventional linguistic means used for expressing that intention, plus the subsequent appropriate response by the hearer. What Searle, following Austin, calls the 'uptake' of the illocutionary force of an utterance is surely equivalent to recognition of the potential response set appropriate to utterances of that form.

The drift this argument is taking is, as should be apparent, towards the position that for the purposes of discourse analysis all speech acts are best defined in terms of perlocutionary force (intended effect upon the hearer)¹, this being, in the case of a 'Request for Information', for example, the elicitation of an answer. The term 'illocutionary force' we then can reserve for describing the interface between linguistic forms and language use, from the point of view of sentence grammar. But in this case have I not undermined the justification for at least one of the acts listed above, namely 'Request Information', since I have associated it with Searle's illocutionary act 'Question'? When we come to examining appropriate response sets in the next chapter we shall see that it is indeed a 'perlocutionary act' of the same status as the others, but what is special about it is that, as the unmarked function of the interrogative form, its perlocutionary force corresponds directly to the illocutionary force of that form in the language system. Because

¹ A possibility Searle mentions (1969) but shies away from, seeing the spectre of Stimulus-Response theory loom (not a justified fear, as I shall attempt to show). Sadock (1974) also argues that an illocutionary act is a variety of 'force perlocution'.

of this special characteristic, an interrogative utterance can always be treated as a case of (a)(Request for Information) if no further ulterior reason for its production (corresponding to some more specific discourse act) can be found.¹ As a discourse act with its own 'expected' response set it is not to be equated with the (syntactic) interrogative form (which I shall label 'ASKIF'), and is not to be regarded simply as the output of other eliciting discourse acts such as 'Game Question', which also produce ASKIF utterances as output. That it is in some sense a more 'basic' act (i.e. found in wider contexts) than 'Game Question' (which is derived from it) is not in doubt: witness the way players occasionally forget the rules of the game and respond 'automatically' to illicit game questions as simple 'Requests for Information', readily supplying the answer (e.g. the beginning of Game 39 in the Appendix).

Sinclair and Coulthard (1975) have expressed this relationship between form and function of interrogatives as tri-stratal, as follows, where an interrogative form (according to the grammar of the language) may be intended as /recognized as a question (its function in the situation of utterance but independent of discourse context), which in turn may serve the discourse function of eliciting information:

<u>Discourse</u>	<u>Situation</u>	<u>Grammar</u>
Elicit	Question	Interrogative

In our own data there appears to be no independent justification for the middle stratum here (where 'Question' seems to correspond to the force of our act (a)) since the game situation does not itself serve to disambiguate the force of a grammatical interrogative independently of specific discursual context in a manner analogous to the classroom situation of their data, which is associated with certain typical functions of interrogatives (e.g. as commands). Situation of utterance must certainly enter into our own description, but it is simpler to stick to a bi-stratal model for our purposes. Getting from an ASKIF grammatical form to the discourse act its utterance is performing will indeed involve knowledge on the hearer's part of relevant situational context and of the discursual sequence in which it is embedded (what Sinclair

¹ This is not to claim that the utterances falling under (a) cannot have 'ulterior' motives behind them. The point is that what they all have in common is what is relevant to discursual intentions and responses: the questioner does not necessarily want the hearer to recognize any such ulterior motive - he merely wants the information.

and Coulthard call 'tactics');but this is a matter of procedures rather than of intermediate representations.

The outcome of this excursion is,then,that we have decided upon 'expected response set' as the major criterion(apart from functional 'definition',which proves insufficient on its own)for distinguishing the acts in our classification.In the following chapter I shall show, by examining actual responses to utterances in the data performing the acts concerned,how this is justified.We shall also see,however, that there remains a certain degree of overlap between response sets for different acts and that we shall have to appeal to propositional content(and discoursal context of a wider sort)to describe how the performance of these acts is recognized as such.

What we have been talking about in this chapter are 'discourse acts' - the term we shall henceforth use - whereby distinct communicative needs on the part of the speaker¹ (such as the need to elicit some piece of information) are fulfilled - at least potentially -by an appropriate response on the part of the hearer.How this relates to the two major approaches to speech act theory - that which attempts to extend a description of the language system into pragmatics by way of rules and conventions,and that which tries to explain communicative activity in terms of complex intentions,shared knowledge and inferential procedures,etc.,independantly of particular linguistic forms - will be returned to in the second half of Chapter 2.

¹Of course any one utterance may fulfil more than one of our discourse acts;the ambiguity involved may even be played upon,as in the case of 'pivot' game questions.

Chapter 2

We now turn to an examination of typical responses to the discourse acts differentiated in Chapter 1; exact contexts can again be found in the Appendix.

Responses to Game Questions:

(All games:) 'Yes / No.' ('Yeah/ uhuh/ oh yes/ no, no' etc)¹

G.4: 'Yes, it does / No, it doesn't.'

G.4: 'Yes. That particular one.'

G.4: 'Um... That's difficult to answer!'

G.28: 'Yes, as far as I know.'

G.28: 'I can't answer that question!'

G.34: 'No, people don't consume it.'

G.40: 'Strictly, no...'

G.42: 'I don't think so.'

G.42: 'Yes...'

G.31: 'A member of the royal family.'

G.31: 'Princess Anne, right.'

G.23: 'Yes... Not it itself.'

G.13: 'No. It's alive. It's in this room.'

G.20: 'Right.'

G.27: 'It could be movable.'

G.27: 'Not 'in' Edinburgh.'

G.28: 'I don't know.'

G.32: 'Which one?'

G.35: 'I must answer 'yes' there, they do.'

G.35: 'No... but in a sense you're getting warm.'

G.13: 'You've already asked that, didn't you?'

G.40: 'You mean do I think it's pretty?'

G.40: 'Yeah, I'm sure you must have.'

G.40: 'It is a bridge, yes...'

G.4: 'No, I wouldn't say so.'

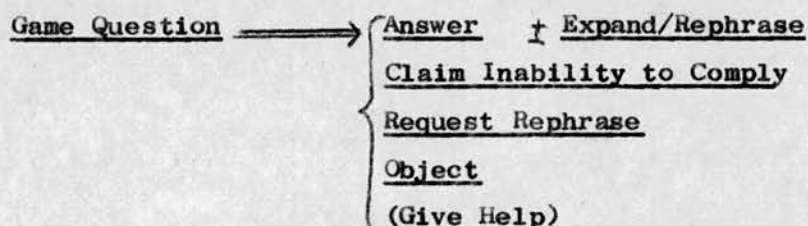
G.18: 'It may be, but that's not its purpose.'

The printed rules for the game stipulate merely that the answers ought to be simple 'yes/no' ones, though more elaborate responses are permitted if the answerer feels it is impossible to answer a question

¹ Including grunts, nods and other paralinguistic signals

in this dichotomic fashion.

It is possible to summarize these various responses in a 'response sequence' rule of the following kind, where the double arrow is to be read as 'is typically followed by' and the alternatives on the right constitute the 'expected' response set on the part of the addressee for the discourse act on the left. This kind of interactive rule is of a very different kind from those that can be incorporated into a sentence grammar, a point we shall develop later in the chapter. As Labov points out (1970), such sequencing rules operate between speech acts, not between utterances. Discourse act labels will henceforth be underlined; English words referred to are between quotation marks.



The conditions leading to the choice of one response type out of the set are self-evident: if a simple yes/no answer is possible the first alternative is chosen (the unmarked response); if this is not the case an expansion/rephrase may be requested (if the answerer sees the possibility of a yes/no answer to a rephrased version of the question) or inability to answer claimed (if not a amount of rephrasing is going to help), or an objection raised (if a broken rule precludes a straight answer). If the questioner is way off the mark the answerer may choose to give him a clue - though an Answer usually precedes the Give Help unless it is presupposed in the content of the latter, which, being independantly activatable at any point in a game, need not be marked on this rule. An expanded form of answer (perhaps rephrasing the propositional content of the question) is given if the answerer feels that a yes/no answer, though justified by the rules, is misleading if unqualified; this may create an overlap with the conditions for choosing the Give Help alternative. Note that these responses are also appropriate to a wider range of guessing situations, where the 'answerer' wants the 'questioner' to work out the answer for himself; outside of games like 'Twenty Questions' with rules limiting the type of answer allowed, the answerer can presumably decide for himself how helpful he is going to be.

Just as we saw in Chapter 1 that the act of Game Question could be

realized by a variety of forms depending on discorsal context and attitudinal factors, we can write a 'realization' rule for Answer, bearing in mind again that stylistic/ideolectic factors complicate the actual conditions of choice for each alternative form. The rule is merely a representation of options available to the answerer (those found in the data).

$$\text{Answer} \longrightarrow \left\{ \begin{array}{l} \text{REPLY}_{\pm} \quad \pm \text{STATE}_{\text{p}} \quad \pm \text{Hedge} \quad \pm \text{Tent}^1 \\ \text{STATE}_{\text{p}} \quad \pm \text{'right/correct'} \\ \text{Hedge} \quad \pm \text{Tent} \end{array} \right.$$

REPLY_± indicates any linguistic or paralinguistic affirmation or negation marker; 'p' is the propositional content of the preceding question; 'Tent' is tentative intonation (typically high rise-fall-rise \nearrow); 'Hedge' can be realized in a number of different ways, e.g. as a noun phrase modifier ('not __ itself'), as an adverb ('strictly'), as a subordinate clause ('so far as I know'), or as a whole sentence ('I wouldn't say so'). Similar rules for responses to all acts in Chapter 1 follow.

Responses to Requests for Information:

The game numbers here (and in the following lists) refer to the same exchanges given in Chapter 1 under the corresponding discourse act - i.e. these utterances are the responses to the utterances listed there. Note that some of these sequences presuppose particular role-bearers as initiator or responder (notably (e), (f) and (g)).

G.40: 'Functional.'

G.12: 'It's more or less a red herring, yes.'

G.42: 'No.'

G.49: 'I don't want to switch it off at all.'

A response sequence rule covering these examples can be formulated thus (where possible sequences not actually met in the data are bracketed):

$$(a) \text{ Request Information} \longrightarrow \left\{ \begin{array}{l} \text{Answer} \quad \pm \text{Expand/Rephrase} \\ \text{(Claim Inability to Comply)} \\ \text{(Object)} \\ \text{(Request Rephrase)} \end{array} \right.$$

The realization rule for Answer here is the same as for a game question

¹ No linear order is implied by any of these outputs.

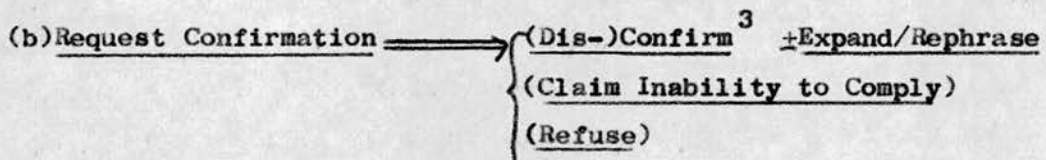
answer; in fact the above sequence rule also largely overlaps with the previous one (the absence of Give Help as a possible response to this act is due to the fact that in this 'unmarked' case of asking a question the answerer is not obliged by game rules to withhold information and cannot merely hint at the answer, unless some more complex perlocutionary act is simultaneously being performed¹). Game Question is nevertheless a distinct discourse act from this one, both as regards the specific effect of adding one to the game count and as regards special constraints on propositional content. An example where a (presumably) intended perlocutionary effect overrides the 'unmarked' response set corresponding to a Request Information is found in Game 13, where the utterance 'Are we supposed to keep count?' elicits the response 'That's five' (still a case of requesting information - but different information from that directly requested in the corresponding unmarked case). Such cases will be treated in Chapter 3, where indirect discourse acts are considered. To all polar questions performing this act a minimal 'yes' or 'no' is a sufficient response (given suitable propositional content).

Responses to Requests for Confirmation:

G.11: 'Mm. That's ten.'

G.42: 'Pretty sure.'

G.41: 'No, I didn't say it wasn't a construction.'



A partial realization rule for Expand/Rephrase is as follows:

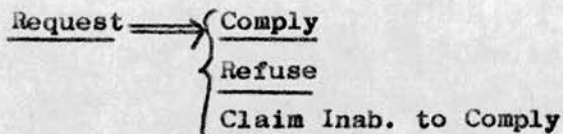


where 'Rp' is a rephrasal of the proposition in the request. We might wish to formulate a more general rule for all requests at this point, namely:

¹ In which case the sequence rule would be between this act and Give Help.

² A number of surface syntactic variations on this (and any other) realization formula may result of course, as determined by thematic discourse-level rules (see Chapter 6) and the 'predicate frames' of individual lexemes. Note G.27 and G.40 below.

³ Largely overlaps with Answer in realization.



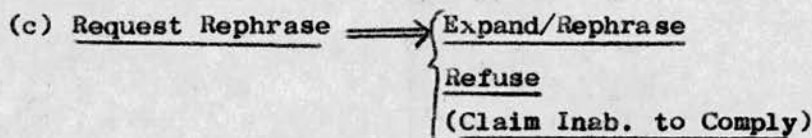
This merely shows what they all have in common, and does not undermine their status as distinct acts (they have distinct felicity conditions, syntactic forms and propositional content constraints on 'p' in the realization rules attached to them). The difference between response sets for different types of requesting acts can be seen in the following for requests of rephrasing, when compared with (b).

Responses to Requests for Expansion/Rephrasing:

G.34: 'Not at all!'

G.27: 'Well, what I mean is... (etc.)'

G.40: 'No, I mean is it decorative?'



The example from Game 40 involves two discourse acts combined: the questioner here (see under (c) in Chapter 1) is both asking for a rephrase and formulating a hypothesis as to what that rephrase will be, the latter requiring confirmation. The answerer responds with both the 'no' required by the disconfirmation of the hypothesis and the rephrase requested, in one utterance. Note the 'jocular' reply in Game 34, which is a play on the polite formula used in the request (a 'parasitic' realization of Refuse): the impression of willful inappropriateness comes from the questioner's reasonable expectation that the answerer will comply, there being no apparent reason why he shouldn't.

Responses to Expressions of Surprise:



In other words there is no response sequence associated with this act, and in the three exchanges referred to in Chapter 1 the following utterance is either produced by the same speaker or is totally unrelated (as in the Game 36 example: 'You've got two to go'). This act can, however, easily combine with Request Confirmation, as already mentioned, in which case a (Dis-)Confirm may follow.

Responses to Giving Help:

G.40: 'Yeah. The suspension bridge?'

G.41: 'The Forth Bridge?'

G.49: 'Pies or Baked Alaska or...'

(e) Give Help \Rightarrow $\left\{ \begin{array}{l} \text{Game Question}^1 (+ \text{Acknowledge}) \\ (\emptyset) \end{array} \right.$

The intended(perlocutionary)effect of the clue is, of course, that the questioner should use the new information to formulate his next question; he ex p e c t s that the questioner will in fact ask such a question as his next move - and this is what the rule captures. The \emptyset response allows for the questioner being unable to use the help or ignoring it. His next move will even in this case be expected to be a Game Question, but this is due to the question-answer framework of the game (the wider discursial context) rather than to the immediate response sequence.

Responses to Offers of Help:

G.41: 'Is it a harbour or something?'

G.21: 'Um, no... thank you.'

G.28: 'Yes.'

(f) Offer Help \Rightarrow $\left\{ \begin{array}{l} \text{Accept (Help)} \\ \text{Refuse (Help)} \\ \emptyset \end{array} \right.$

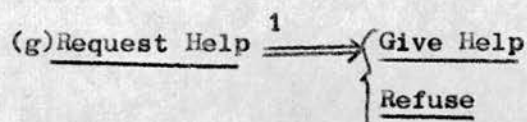
\emptyset again represents ignoral (as in G.41). The minimal realizations of Accept and Refuse (Help) are, respectively, 'yes' and 'no' (the 'neutral' responses to a polar interrogative as in (a) above). Other realizations would be expected, presumably, if the offer were not couched in the interrogative form: our realization rules have ultimately to be more context-sensitive.

Responses to Requests for Help:

G.31: 'You've got several questions left, so you might as well.'

G.33: 'You're well off enough, I should say!'

¹ i.e. a new question, based on the clue. The answerer initiates, the questioner responds in this sequence, as also for (f).

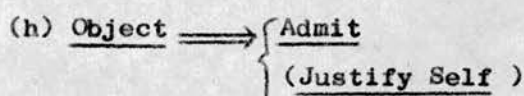


The questioner in the Game 31 example inserts a comment justifying his request for help (see Chapter 1 under (g)) immediately after his request, and, similarly, the answerer starts his response with a justification of the advice he is giving. Both these elements would have to be indicated on the realization rules for the two 'head' acts involved (which, especially in the latter case, could be rather complex). In general, single acts can be realized by a sequence of acts. Whether this justifies analysis in terms of larger discourse units (say 'moves' as opposed to acts) will be discussed in Chapter 4.

Responses to Objections:

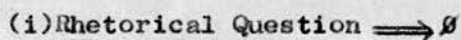
G.27: 'Perhaps, yes.'

G.12: Ø



An objection can - as in Game 12 - be regarded as rhetorical by the hearer, in which case he ignores it.

Responses to Rhetorical Questions:

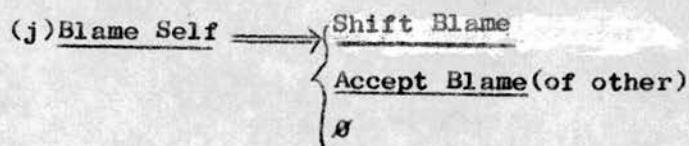


These are almost by definition unresponded to (and in the examples the subsequent utterance is always spoken by the same speaker), though there is still a certain perlocutionary effect intended - e.g. communication of attitude towards a proposition, or some form of 'convincing'.

Responses to Self-Blame:

G.36: 'No, no, I don't think so.'

G.36: 'No, I mean what could you say?'



¹ Initiated by questioner

The choice here depends very much on inter-personal factors such as politeness, friendliness, etc. There are presumably numerous ways in which the high level act of shifting the blame back to oneself (or at least away from the self-blamer) could be realized. The one chosen in the second example above is to cast doubt on the possibility of other courses of action the self-blamer could have followed in the circumstances, via a rhetorical question.

Responses to Requests for Permission:

G.20: 'No.'

G.21: 'There are certainly some senses...etc.'

G.28: 'So the question doesn't count.'

(k) Request Permission \implies $\left\{ \begin{array}{l} \text{(Grant Permission)} \\ \text{Refuse Permission} \end{array} \right.$

The requests in G.21 and G.28 are ignored (refused) since the rules of the game are such as to make them inappropriate, and therefore to be taken as jocular. Note that in the third case the request was the second half of a compound act involving a Claim Inability to Comply ('I can't answer that question'), and the response above is thus also related to that act. Linkages between successive acts on the part of the same speaker will be further discussed in Chapter 4.

Responses to Signals of Intent:

(1) Signal Intent $\implies \emptyset$

This act is always followed by the action the speaker announces he intends carrying out, though this action may in fact be silent (recapping to oneself) as in the Game 27 example (Chapter 1 under (1)), where a lengthy pause is followed by a new game question.

We can now summarize our findings in a table as follows, indicating all the aspects of our discourse acts necessary for their recognition as such, within the game. Sincerity and preparatory conditions for their appropriate performance are - as features of the discourse context (see Chapter 5) - not marked here. The labels of the acts in the left-hand column can be regarded as describing the communicative needs served by the acts (as intended by the speaker). It is the combination of minimally adequate response set and propositional content (the central

columns) that forms the basis of this classification into distinct acts, parallelling the intuitive classification supplied by column one. The last column gives only a very sketchy indication of some of the more common realizations of these acts (interrogative forms only). Due to its special relation with the language system, Request Information will be put first and marked 'Ø'. A dash means 'no constraints'.

<u>Act</u>	<u>Response Set</u>	<u>Prop. Content</u>	<u>Realiz. Features</u>
Ø) <u>Req. Info.</u>	<u>Answer</u> <u>Claim I. to C.</u> <u>Req. Expand</u>	—	Interrog. form
a) <u>Game Q.</u>	As above (plus <u>Give Help</u>)	Refer to game object; relevant to game goal	As above, plus STATEp+ ~ and 'What about'+NP
b) <u>Req. Conf.</u>	<u>(Dis-)Confirm</u> <u>Claim I. to C.</u> <u>Refuse</u>	Contain prop. presumed known to answerer	As (Ø) Tag Q. common
c) <u>Req. Rephr.</u>	<u>Expand/Rephr.</u> <u>Claim I. to C.</u> <u>Refuse</u>	Refer to action required or echo prior utterance	Modal request form or 'you mean'+Rp
d) <u>Express</u> <u>Surprise</u>	Ø	Echo prior utter.	Surprised inton.
e) <u>Give Help</u>	<u>Game Q.</u> Ø	Relevant to game goal	—
f) <u>Offer Help</u>	<u>Accept</u> <u>Refuse</u> Ø	Refer to help	Modal offer form
g) <u>Req. Help</u>	<u>Give Help</u> <u>Refuse</u>	Relevant to game goal	As (Ø) or (c)
h) <u>Object</u>	<u>Admit</u> <u>Justif. Self</u>	Refer to content of utter. objected to	Querulous inton.

i) <u>Rhet. Q.</u>	Ø	—(?)	Low volume
j) <u>Blame Self</u>	<u>Shift Blame</u> <u>Accept ("")</u> Ø	Refer to blame- worthy action (own)	—
k) <u>Req. Permiss.</u>	<u>Give Permiss.</u> <u>Refuse</u>	Refer to action required	Modal request form
l) <u>Signal Intent</u>	Ø	Refer to inten- ded action	As (k)

We must now relate our findings to, on the one hand, what philosophers of language have to say about speech acts in terms of speaker intentions and, on the other hand, to what linguists (and linguistically oriented philosophers) have to say about linguistic forms realizing particular speech acts. Both approaches are essential if we are to attain our goal of characterizing a production system capable of accounting for the generation of all the games in our data. Since both approaches tend to employ the notion of 'illocutionary force', which I have rather summarily deemed irrelevant to present purposes, we must take a closer look at how this term is used by two representatives of these approaches, Strawson and Searle respectively.

Strawson's formulation (1971) is as follows: understanding the illocutionary force of an utterance involves recognizing the audience-directed intention behind it, and recognizing it as wholly overt - as intended to be organized (i.e., I take it, recognizable through its organization/form). Further, developing Grice's original formula in 'Meaning' (1957), he argues that a successful illocutionary act is performed if the speaker of an utterance intends to produce an effect on the hearer and the hearer recognizes this intention, and if that recognition forms part of the hearer's reason for responding as he does (according to the intended effect). 'Convention' is involved only in so far as the speaker uses conventional linguistic means for performing the act in question¹. Intended discoursal effect (including the overt response expected) is an essential part of this formulation, and yet we have opted for a purely perlocutionary description of the acts in our data. We must

¹ Though certain acts are essentially conventional according to him (e.g. naming a ship, pronouncing a defendant guilty, etc.)

examine some of the latter more closely to see if Strawson's formula does apply.

In the case of Game Question the speaker certainly intends to produce a particular effect on the hearer (resulting in a 'yes/no' response or some other suitable realization of the response set for that act), and he intends the hearer's recognition of this intention to partially determine his response. The hearer has to recognize that a game question has been asked in order to respond appropriately (i.e. respond 'yes/no', etc., and add one to the count). The basic formula works equally well for Request Confirmation, where the hearer must recognize that confirmation is being requested in order to respond with a Confirm and not, for example, add one to the count. Similarly for Request Rephrase/Expand.

What is special here about the 'neutral' act Request Information is that the hearer only has to recognize that a polar question has been asked (as directly determinable from the form of the utterance) in order to respond appropriately with a reply: he does not need to recognize any further motivation behind the act, whereas for all other acts realized by interrogative forms in the data something else must be recognized for successful uptake. This 'something else' is signalled by propositional content or by linguistic markers conventionally associated with the act (e.g. tag questions in the case of Request Confirmation). These acts, at least, all seem to fit Strawson's criteria for illocutionary acts then. But what of more linguistically 'remote' discourse acts such as our (j) (Blame Self) and (e) (Give Help)?

In blaming himself for something it is certainly part of the speaker's intention that the hearer should recognize his intention of blaming himself and that this recognition should partly determine the effect it has on him (whether or not it results in overt verbal response). Yet it can hardly be termed an illocutionary act in the original Austinian sense (one certainly can't say anything like 'I hereby blame myself that -', using Austin's test), any more than the act of helping/giving a clue can. The difference here is not so much one of 'overt avowability' of intention (a condition Strawson puts on illocutionary but not perlocutionary acts) - though it may be irrelevant whether the hearer recognizes that an utterance is intended as a token of Blame Self or Give Help or not, as long as he responds appropriately by treating it as another, lower level act. It is rather that there is no linguistic convention for expressing these acts in a certain form

and they must therefore be mediated by some other act. In our terms, they lie at the perlocutionary pole of the cline at whose other pole are found discourse acts for which 'illocutionary force' does 'exhaust the meaning' (as Strawson puts it): mediation by another act is in their case not possible. Discourse acts between the two poles (such as our (b) and (d)) are all indirect to some degree or another.

Illocutionary force is for Strawson, then, that intended force which must be recognized by the hearer as adhering to the form of the utterance for him to respond appropriately to it (as opposed to, say, 'convincing' or 'boasting', which the speaker may or may not wish the hearer to recognize as such but which is not relatable to any particular form type). Since this recognition is mediated by the linguistic form of the utterance, we can simply correlate his use of the term 'illocutionary force' with that pole of our continuum of discourse acts which has the most direct linkage with linguistic form - i.e. the mood system of the language.¹ This is quite compatible with our emphasis on 'expected responses' as opposed to 'conventions' in differentiating discourse acts.

Turning now to the approach to discourse from the point of view of linguistic system, we find a greater concern with rules for relating function to form. Thus Searle, while realizing the complex, multi-dimensional nature of what he terms 'illocutionary force', attempts to reduce the extensive class of illocutionary acts suggested by Austin² to a small set of basic acts, whose relationship to the linguistic mood system (of English) is fairly transparent and whose force is conventionally associated with distinct 'illocutionary force markers'. Though he does of course speak of situational conditions and communicative intentions on the part of the speaker, these are on a generalized, context-free plane (situational rather than discursive, in Sinclair and Coulthard's terms), and he does not address himself to the question of expected responses. Following Austin, he is more concerned with the secular of 'uptake' (comprehension of the speaker's illocutionary intention) for isolated utterances rather than for utterances in context-of-discourse. He is not perturbed by the fact that many of his 'illocutionary force markers' are redundant in discourse and not in fact overtly expressed (being relegated to 'underlying' linguistic structures). This suggests that

¹ Allowing for modification of his formula to exclude cases like (j) and (e) above.

² On the basis of the large number of performative verbs in English.

'uptake' is a rather abstract notion, not to be equated with 'recognition of complex intention' on the discourse level.

Though this approach is essential to any discussion of the unmarked or 'neutral' function of particular linguistic forms, there are problems when attempts are made to extend it beyond a handful of basic acts, and in particular when what are in fact complex discourse acts are explicated in terms of deep structures of some version of an abstract sentence grammar.¹ The thrust of the present thesis is towards a sharp distinction between discourse-level pragmatics and sentence-level grammar, justification for which - in terms of simplification of description - will be demonstrated in the following chapters.

If we are to reject an illocutionary view of discourse acts we had better be able to account in some other way for the felicity conditions analysed by Searle as distinguishing speech acts. We shall then be able to judge the 'conventional' or rule-defined status of our discourse acts, and in turn see whether the type of regularity between form and function discerned by linguists might make us wish to reformulate our classification in terms of more general acts such as those Searle proposes.

I have argued that the 'essential condition' of Searle's speech act paradigm is simply a matter of the act's function (plus appropriate response set) - i.e. a tautological statement of the function conventionally associated with forms tokening the act. But what of his 'preparatory' and 'sincerity' conditions?² The former are as follow for his speech act 'Question': 1) the speaker doesn't know the answer already and 2) it is not obvious to both speaker and hearer that the hearer will provide the information of his own accord at that time. The only sincerity condition is that the speaker should want the information. These conditions certainly apply to our acts Request Information and Game Question (and others). But the kind of question we want to ask (in developing

¹ The same may be said of the functional approach of Halliday which, though it identifies a textual (discourse level) component, rests on a notion of 'choice' (systemic) quite different from that of choosing in procedural terms how to express an intention; due to its non-concern with response sequences it is difficult to extend beyond the basic mood options of its 'interpersonal' component.

² His 'propositional content condition' is covered by the third column of our table of acts.

a production model for our data) is whether the hearer has to calculate that these conditions are met to decide that the act in question has been performed. This is clearly not necessary in the context of 'Twenty Questions' (except perhaps for certain interruptions of the game sequence) since the context itself determines both these sets of conditions (if they didn't apply they wouldn't be playing the game). How situational contexts can be formalized to indicate such conditions relevant to the recognition of acts performed within them will be considered in Chapters 4 and 5.

Similar considerations apply to Searle's speech act 'Request', where the following felicity conditions are met by at least our discourse acts (b), (c), (g) and (k): preparatory - 1) the hearer is able to do A (the action requested) and believes the speaker is not, and 2) it is not obvious that the hearer will do A of his own accord; sincerity - the speaker wants the hearer to do A. Here again it is the situational context that determines what the player might want to do or is able to do and is likely to request (at least as regards the actual playing of the game). It is the propositional content (and, secondarily, any linguistic marker typically associated with the particular kind of request act) that will determine the appropriate response set fulfilling the request.

I have already expressed doubt as to the relevance to discourse analysis of Searle's notion of underlying rules which determine whether an utterance 'counts as' performing a particular speech act. At this point I must forestall objections that could be made to the effect that by denying the relevance of such rules I am a) denying the rule-based nature of discourse and b) opting for the only alternative, a behaviouristic Stimulus-Response theory. There is probably some confusion lurking here as to what exactly is meant by a 'rule'. Searle's application to speech behaviour of the distinction between 'constitutive' and 'regulative' rules (those which actually constitute the game being played - e.g. the rules of football or chess - and those merely social conventions that regulate independently existing behaviour - e.g. the rules of etiquette) seems to be based on a rather shaky analogy with board and field games. Whereas a given move in such a game is determined solely by convention, regardless of context, the act a given linguistic form performs in discourse is partially determined by context. A more useful distinction for our purposes might be made here between those rules actively followed in the production of behaviour (consciously or otherwise) and those forming part of a linguist's or sociologist's model

which capture regularities of language behaviour¹. The procedures (including those corresponding to grammatical rules) that are active in the production of utterances may not correspond directly to those generalizations that capture most succinctly the 'communicative competence' of the speakers of such utterances. No doubt much of human language behaviour is capturable by such rule-like generalizations. But what Searle appears to be claiming (and he's by no means alone in doing so) is that these generalizations are somehow internalized within the speaker and are thus in some way productive of the behaviour in question. This is a strong claim. I, on the other hand, wish to demonstrate how a language generation/comprehension system can be characterized which produces regular behaviour without necessarily 'following' all such generalizations as internalized rules. This will not entail the positing of a large number of stimulus-response couples, operating automatically: any of our discourse acts can have a variety of realizations (the sequencing and realization rules have context-sensitive output), and, moreover, these outputs can be overridden by higher level requirements (cf. the 'Meta-frame' in Chapter 5) or be blended with outputs of simultaneously performed acts. Our 'rules' are indeed intended to correspond (in some fairly direct way) with cognitive procedures that could plausibly account for the production/comprehension of the acts evidenced in the data; but they represent, in fact, no more than testable intuitions as to what the speaker/hearer may expect at a given point in the discourse. Generalizations² over a wide range of related acts, abstracting from context, are only of direct interest for our purposes if they can be shown to simplify our production model.

Let us examine, then, one such taxonomic simplification (abstract generalization) related to our data: Searle has claimed (1976) that his speech act 'Question' is really a variety of 'Request' - both are 'directives' in his more recent classification. The illocutionary 'point' is in both cases to 'get the hearer to do something'; he formalizes this as '!: \uparrow W (H does A)', where the exclamation mark is the illocu-

¹ Cf. Lyons (1977) on models. I am not claiming that mine is necessarily closer to 'real' cognitive processes than anybody else's, merely that it is not based on a 'one behavioural generalization = one productive rule' assumption such as underlies many others.

² e.g. Searle's (constitutive) rules for the felicity conditions of a general speech act 'Question'.

-ionary force indicating device for a directive¹, the vertical arrow means that it is an attempt to 'change the world' by the performance of the act, and 'W(H does A)' indicates the (future) proposition corresponding to what the speaker wants done by the hearer. The difference is that 'A' in the case of a question is supplying the information requested and in the case of a request is some other action (which may or may not be performed by verbal means). 'W' is the sincerity condition of the speaker wanting a response from the hearer, and 'H does A' is the propositional content condition. This latter condition presents a problem for questions, since no mention need be made within the utterance of what the hearer is to do (namely answer) - only the proposition to be answered to is typically made overt. One might suppose that we are here in the realm of 'underlying' performative markers (e.g. for '!' when there is no overt marker), but this is not of much use for the hearer in recognizing the force of an utterance.

The point I wish to make is not that Searle's taxonomy is incorrect. It merely does not simplify our production model, since the latter must account for hearer recognition of tokens of each particular discourse act type subsumed by the category 'directive' in order for an appropriate response to be produced in each case. He has shown convincingly how illocutionary acts can be reduced to a very small set when one considers the 'neutral' function of sentence types; the way that discourse acts in context utilize these potential functions is a different matter - one which directly concerns us.

There is in fact linguistic evidence that supports the treatment of requests and questions as separate acts. Thus Sadock (1974) points out that real questions may be strengthened by such markers as 'the hell', unlike what he calls 'requestions', which, in turn, can be used with the politeness marker 'please' whereas real questions cannot (without adding a 'distancing' effect). Thus, in opposition to other generative semanticists who see an underlying 'request-tell' beneath real questions, he sees such questions as 'Where is John?' as ambiguous as to which of the two types of act is being performed. Johnson² (1976), reviewing Sadock's position, adds further arguments from distribution (e.g. the fact that real questions - with the illocutionary force 'Ask' - can undergo

¹ This presumes that there is some overt marker of the force in question - which in many cases there isn't (see Chapter 3).

² Who denies the ambiguity Sadock claims

certain kinds of idiomatization that requests cannot) and from the consequences of admitting an underlying 'tell' in the deep structure of real questions (e.g. time and manner adverbials relating to such an underlying predicate cannot, as might be predicted from its existence, appear in surface forms of real questions). Such arguments are, unfortunately, based on rather dubious single-sentence examples and rely heavily on theories of 'underlying' performative representations. But her principle conclusion is interesting: questions are different from requests, she claims, because the appropriate responses to them are different. Namely, a (polar) question can unambiguously and independently of content be satisfied by a following 'yes' or 'no' alone, whereas a request cannot. This seems to me to be the only way one can escape from the circularity of arguing about hypothetical underlying representations and directly relate the linguistic forms to their discourse function here. The distributional generalizations unearthed by linguists concerning utterances performing different acts must, of course, be accounted for in our realization rules (as I have attempted to do in some detail for game questions), but there is advantage to be gained from approaching the question of realization from the discourse level rather than from within the grammatical system of the language itself. For one thing, most of the features/conditions relevant to the contextual recognition of the force of a given utterance can be taken care of at a higher level (that on which our discourse acts are defined), and one simply does not have to hypothesize deep structure performative elements according to the particular brand of grammar one espouses. Syntactic deep structures can be left for purely syntactical information, surely a desirable state of affairs if it allows us to construct models of discourse behaviour without having to rely on any a priori theory of grammar.

We have seen how the form-function relationship of discourse acts can in theory be handled independently of any particular sentence grammar, and we must now turn, in pursuit of more detailed realization rules, to examples from our data where one or another of our acts is realized by forms typical of other acts. We shall need to enquire how it is that the hearer can recognize the speaker's complex intention behind such utterances.

Chapter 3

Our principle concern with 'indirect speech acts' in the data is as to how the hearer might recognize the speaker's utterance as a token of the act(indirectly)intended in order to be able to respond appropriately¹.There are two main problems here which must be kept apart:the realization of an act through a form typically associated with some other act,and the performance of more than one act by one utterance.It will be seen that there are two related approaches to a solution:on the one hand in terms of calculation by the hearer of the speaker's complex intention via principles of basic conversational cooperation and of speech act theory(the **procedural approach** favoured by Grice and developed in his own manner by Searle in his article (1975) on indirect speech acts),and on the other hand in terms of the recognition of discrete discourse acts expected by the hearer in context(an approach much less developed than the former).Just as in Chapter 2 it was argued that the intentional and the conventional approaches to 'direct ' speech acts are complementary,it will now be shown that both the above-mentioned approaches to indirect speech acts can - and should- be integrated in our model.The latter is demonstrably simplified if allowance is made for the hearer to resort to computation of speaker intention via basic conversational(and world knowledge) principles only when an utterance doesn't immediately match his expectations according to either the present response sequence or to the higher question-answer framework of the game.The model does indeed incorporate indirect (discourse) acts - only the line between them and more direct realizations is drawn somewhat differently than it is by Searle.

Most investigations of indirect speech acts (which tend to be limited to such relatively transparent cases as requests couched as polar questions)are in terms of the hearer's computation of the 'primary'(or 'conveyed') force behind the 'literal' illocutionary force of the utterance.What seems to be meant by 'literal force'(Searle's term) is the pragmatic force adhering to the 'neutral' use of the relevant syntactic form - e.g. the interrogative -,and of these basic sentence patterns there are only a handful within the mood system of any language.When we address ourselves to a wider range of contextual-

¹And secondarily as to how the speaker might choose a form to realize his intention to perform the act

ized discourse acts, however, the relevance of the notion becomes much more questionable due to the wide array of forms available for realizing them and to the possibility of one utterance performing more than one act at once. Thus already in the case of game questions we have found that forms typically associated with the making of statements are common in this function¹. It seems intuitively unlikely that the hearer in these cases has first to recognize that the utterance is a statement (its 'literal' illocutionary force), then to compute the implicature (Grice's term for this relationship) that its primary force is that of a question. This would appear to be a clear case where hearer expectations override the formal (syntactic and even intonational) properties of the utterance². What he does have to calculate in order to determine whether it is in fact a game question is the appropriateness of its propositional content and whether it implies a yes/no answer. This he can only do by computing what the answer might be. But he has to know that the utterance is in fact meant as a question in order to search for an answer: without introducing the notion of context-determined expectancies this is obviously going to remain circular. This reformulates the reason why we decided in the previous chapters to treat asking a game question as a distinct act from Request Information even though their response sets largely overlap. The fact that there is a well-known response sequence between the latter act (typically associated with the interrogative form) and a 'yes/no' answer is not of any use in itself to the hearer in determining how to respond to a game question which is not in the interrogative form. Response sequences are between acts, and it is simply false to state that, for example, polar interrogative forms call for yes/no responses (e.g. in the case of rhetorical questions or requests realized by such forms). A game question is recognized through contextual expectation (i.e. is expected following an Answer act - and vice versa) and appropriate propositional content (this is all that the form types listed in Chapter 1 have in common). An interrogative form is interpreted as a Request Information if there is no over-riding expectation and no formal marker indicative of some other

¹ e.g. form (h) with 'so' or 'then'. Criteria for regarding all these forms as realizations of the same act have been adduced earlier; that 'blends' might be involved is a possibility (see Chapter 5).

² Leaving options on the latter for more subtle modulations of the message conveyed

act present(e.g. of a Game Question)¹.

But how does a hearer recognize when there is no primary illocutionary force (read 'ulterior discourse act intended') behind an (interrogative) token of Request Information? How extensively need he search in order to decide that there is no such ulterior point? Again the answer can be put in terms of propositional content and contextual expectancies: within the 'Meta-frame' for the game (the assembly of expected response sequences - or procedures for predicting them from the rules of the game - relevant to the monitoring of the game's course; see Chapter 4) is contained information as to the predictable motives of the players throughout the course of the game and a corresponding array of discourse act correlates reflecting these motives. The hearer need only check that the interrogative utterance in question doesn't match any of the potentially expected acts by propositional content (and, in particular, doesn't match Game Question) to be justified in falling back on the 'neutral' interpretation of the act as a Request Information. Though there might still be some ulterior point behind the utterance, recognizing it will at least not be essential to playing the game according to the rules. The hearer might well discover some such possible ulterior point (and assume that it corresponds to the speaker's actual intention), as in Game 13:

β: 'Are we supposed to keep count?'

α: 'That's five.'

The point is, though, that a minimal 'yes/no' response would be appropriate here (any further action according to the answer on the questioner's part being wholly his own affair), as in the example from Game 42:

'You been keeping count?'

'No.'

But α in the first example has calculated in addition - via his (Meta-frame) knowledge of what he is meant to be doing during the course of the game - that he should state at this point what the count is in fact. It may simply be a case of unintentional reminding on β's part (he really

¹ Request Information can be realized indirectly in a certain sense (e.g.

'I'd like to know where it is'); such forms should be entered on the corresponding realization rule - it is not a case of a question being realized by another act. An act can also be 'indirect' according to propositional content (literal and primary force being the same) - see the Game 13 example below.

just wanted to know), but sharing the same 'Meta-frame' information he is able to recognize the appropriateness of α 's response to the presumed perlocutionary force behind the question¹.

A nice example of indecision on the speaker's part as to which act to perform - a Game Question or a Request Information, or, indeed, a Request Confirmation, all within the same game move - is provided by Game 14:

'Let me see, is it - Did you say it was - I can't remember if it's - Is it a box of some sort?'

The cause of this indecision is undoubtedly the speaker's uncertainty as to whether or not he has already been given the information he wishes to ascertain. The 'factual' question 'Did you say it was (a box)?' could in theory have been completed and taken by the hearer as a simple Request Information (its propositional content does not match in any direct sense the criteria for counting as a game question), but the speaker decides to reformulate his utterance as an overt game question (being reasonably certain by now that he hasn't already been told whether the object is a box or not). He may well have considered that his partner, in view of the mock-severe attitude she had adopted throughout the game, was quite capable of taking the utterance couched as a sincere Request Information as an indirect Game Question anyway.

When we turn to indirect means of performing other acts found in the data the question whether we are dealing with different realizations of the same act or of indirect realizations via some other act becomes more problematical. Thus, consider the following 'indirect' realizations of 'Request Rephrase'²:

G.32: 'What do you mean 'like an electricity pylon'?''

G.39: 'Perhaps you could rephrase it - not 'Is it the Queen', the one before that.'

¹ One could postulate a rule to the effect that a question whose propositional content refers to an action the hearer is meant to be doing 'counts as' a request for action, as sometimes appears to be the case. But it does not apply in the Game 42 example (see my argument against 'conversational postulates' later in this chapter).

² All these utterances occur in 'move slots' appropriate for game questions or answers, so some real computation as to force is required on the hearer's part.

G.13: 'Well, how do you phrase that?'

G.27: 'Well, you'll have to tell me what the other - the non-pre-dominant - part is: mineral and - ?'

G.36: 'In terms of history' depends on how far back you take history.'

G.17: 'You keep using 'we', which is difficult.'

G.22: 'I don't understand your question, sorry.'

G.34: 'Would you like to develop that?'

G.5: 'What about the brothel?'

G.42: 'Could be involved with the media?'

G.41: 'Sculpture can be in another sense, can it?'

Several of these utterances perform more than one discourse act (thus G.32 is also a token of Object, G.41 a Request Confirmation, and G.27 a Prompt - see below), and this question of multiple function must be teased apart from our principle concern here, namely indirect realizations of a single act. In cases like those just mentioned there will generally be a single response act type that can satisfy both functions simultaneously (e.g. the rephrasal 'Is it an electricity pylon?' that follows the G.32 example, which is also a suitable response to an objection, i.e. a 'self-correction'). When this is not possible, responses appropriate to the two acts concerned may be strung together serially within one 'move'¹. But most commonly one function will dominate in the discourse, given the game context with its attendant goals and motivations, and it is this act which must be appropriately responded to regardless of any secondary function. Thus Request Rephrase is more 'primary' than Object in the G.32 example, since eliciting an answerable rephrase of a game question in such cases is an act essential to the successful playing of the game, whereas objecting is not of itself. It might be the case, however, that the secondary function predominates as regards choice of form (as perhaps in the G.27 example) and thus may enter into the hearer's computation of the primary act involved. The difference between such 'multiple function' cases and indirect 'single function' cases is that the appropriate response set for the 'primary' force of the latter will not be the same as that for its 'literal' force (and sequentially compounded responses to both acts are also inappropriate), so that computation is necessary on the hearer's part to

¹ e.g. G.3, where 'Yes; what she is makes her a political entity in a sense' compounds a Confirm and a Give Help (both elicited)

rule out the second response set alternative. No such computation is necessary in the 'multiple function' case, since the two response sets overlap (or can be compounded) and the hearer can formulate an appropriate response according to either.

Looking at the forms listed above, it is clear that it would be uneconomical to enter all of them as formulae on the output of the corresponding realization rule (there being many other indirect possibilities besides these). We have two ways open to us here: either we list a few typical realizations - including pointers to other acts - or we invoke general knowledge and conversational principles (and contextual expectations) to disambiguate the force of tokens of the act not in a 'typical' form. In fact both procedures appear to be called for in our model.

The Game 36 example illustrates the case where some kind of computation from basic principles is necessary for the hearer to know how to respond appropriately. The full context of the utterance is as follows:

α : 'Is it in terms of history a fairly recent product?'

β : 'No.'

α : 'No?'

$\rightarrow \beta$: "'In terms of history' depends on how far back you take history."

α : 'Twenty, forty years, something like that.'

β : 'Oh no.'

β 's Request Rephrase is itself a response to a Request Rephrase on α 's part (an 'echo question' being another realization of that act) motivated by α 's unhappiness with β 's (unclear?) answer 'no'. After uttering 'No?' then, α is expecting a rephrase of β 's answer. But what follows is not a direct rephrase. According to its form (STATE + \neg) and propositional content it is a Comment (on α 's original question). To account for α 's correct uptake of the 'primary' force (as evidenced by his subsequent appropriate rephrasing of the question) we must invoke Grice's principles of conversational cooperation, whereby α presumes that β 's response is relevant to his request for rephrasal. Since it does not directly constitute a rephrasal, he must look for indirect relevance. Now the most obvious reason why β should not comply directly with his request in the context of the game is that he is unable to supply a more satisfactory to α 's original game question. An appropriate response on β 's part would thus be a Claim Inability to Comply (a response sequence he knows to be possible following a request). Indeed, a Comment with propo-

sitional content referring to the content of α 's question would be an appropriate indirect realization of that act(Claim Inab. to Comply), as it supplies a reason why β is unable to comply more satisfactorily. Given α 's overt intention to get a more satisfactory reply(still unsatisfied), the utterance can be seen as indicating a type of rephrasing that could satisfy that intention; i.e. α understands the utterance as performing both a Claim Inab. to Comply and a Request Rephrase. The first of these is primary from β 's point of view(justifying his own actions)¹, but for α (and his goal of solving the game problem) the Request Rephrase is primary. This illustrates the important point that the 'primary' force of an utterance may be different for the speaker and ^{for} the hearer, even when communicative cooperation is maintained. Another way of looking at it would be to state that utterances in discourse may have both a retrospective force(e.g. Claim I. to C. here) and a prospective force(e.g. Request Rephrase here). Any discussion of indirect speech acts must take this phenomenon into account one way or another.

But what of simpler examples such as those from games 34 or 13 - does the hearer have to calculate the primary force of the utterance from basic principles here too? Only in the trivial sense, I would suggest, that responding appropriately to a particular discourse act is itself a manifestation of the general principle of cooperation. In these cases the form of the utterance plus its propositional content is surely sufficient, in conjunction with contextual expectations, to ensure direct uptake by the hearer of the act involved. For this to be true he need only have internalized some schema(part of a larger rule) corresponding to the response sequence:

Answer \implies Request Rephrase / Answer unsatisfactory /

and a realization rule for Request Rephrase (largely overlapping with a similar rule for a general act Request Action from which it can be derived² by the addition of propositional content constraints, etc.; see later in the chapter):

¹ i.e. he may not have intended the utterance as a Request Rephrase at all

² Unlike, for instance, Request Confirmation, which has quite different realizations(namely ASKIF/STATEp \pm Tag, with very specific constraints on 'p')

Request Rephrase \Rightarrow ASKIF 'Could'/'would'/'can' + 'you' (\pm 'like to')
 $+p_1 +Int$
 ASKWh 'How' $+p_1 +Int$
 'What about' $+NP +Int$
Echo $p_2 \pm Contr$
Req. Confirm p_3

where 'p₁' refers to the action requested; 'p₂' is the content of the preceding utterance, and 'p₃' is an inference from the latter. 'Int' is the intonation patterns(s) associated with requesting, and 'Contr' is contrastive stress on the dubious element in the preceding utterance. Conditions effecting the choice of particular realization formulae (such as degree of politeness) are not here indicated. The first form on the rule is the most 'unmarked' - i.e. the most typical form for such a request, the one used if the speaker assumes the minimum of shared contextual information on the part of the hearer; it is, in our terms, the most direct way of making this kind of request, there being no formal choice in the mood system of the language neutrally associated with this force. Rather than say that all requests are indirect, we can state that typically the act of requesting (e.g. a rephrase) is performed by a modal question form, as on our realization rule.

Note that these rules render calculation of primary force via literal force redundant for most of our listed examples; this has necessitated, however, the insertion of 'pointers' to other discourse acts on the right-hand side of the realization rule, with only the 'unmarked' form(s) spelt out in detail. One has, theoretically, a choice between indicating such pointers in the realization rule itself or in the related response sequence rule. In practice it will be found that although the latter choice might be preferable if all tokens of the act in the data were found in the context of the response sequence of the rule, there will be many cases where the act must be recognized independently of any such sequence (see Give Help below, for instance), in which case realization of that act via some other act independently justified in the data must be marked on the realization rule anyway. The point at which one would wish to stop inserting more and more indirect realizations on a rule and invoke a 'computation from basic principles' explanation of the recognition of the act's force (by the hearer) is perhaps indeterminate. But the safest solution is to enter as many realizations

on our rules as would by consensus be regarded as unmarked(i.e. recognizable as 'typical' realizations of the act in minimal context) or as simply 'very common' in the context of the game. That the force of all of the latter class of realizations might in fact have to be worked out 'from basic principles' when first encountered by a hearer must be allowed for(as in the Game 36 example);this will be further discussed in Chapter 5.¹

It will be observed that according to the realization rule for Request Rephrase above,the notion of 'literal' illocutionary(or perlocutionary) force is extremely tenuous,direct and indirect realizations being incorporated in the same schema.The most general statement we can make is that recognition of (one of) the unmarked form(s) of a discourse act may in some circumstances(as Comment in G.36) act as input to the hearer's computation of the primary force of an utterance(beyond that of the act initially recognized),but that such a step may commonly be circumvented by contextual expectancies.

When we turn to linguistically more 'remote' discourse acts(which can only be realized indirectly) we find a perhaps surprisingly similar picture.Thus,take the following tokens of Give Help² from the data (contexts in the Appendix):

G.33:'I wouldn't want you to pursue the notion of metals too much,
OK;what I said actually was 'mineral'.'

G.34:'Don't think of a whole item.'

G.4:'If you'd like to think along the lines of communication...'

G.49:'Concentrate on the baking - what do you bake normally?'

G.41:'What's it made of?'

G.3:'Yes;what she is makes her a political entity in a sense...
That's a clue.'

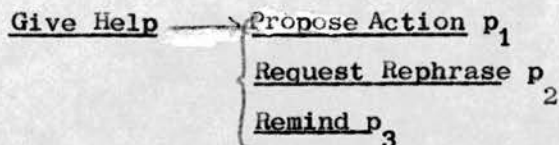
G.31:'You've got several questions left,so you might as well.'

These utterances are covered by the following realization rule:

¹The realization rule must in any case be inclusive enough to indicate the options the speaker has (allowance being made for an utterance 'blending' forms from two simultaneous acts).

²Limited in the game context to the giving of verbal clues relevant to the goal of the game.It may or may not follow a preceding Request Help (it may be initiated spontaneously by the answerer).





where ' p_1 ' refers to some future, goal-orientated action by the hearer; ' p_2 ' is an expansion of a prior utterance of the hearer's which contains more useful information than a simple rephrase would; and ' p_3 ' is a proposition presumed known but momentarily forgotten by the hearer which would help him solve the game problem. Propose Action is itself typically realized by an imperative form or (less authoritatively) a statement of (and/or justification for) the best course of action for the hearer to follow. The factors conditioning the speaker's choice of realization here are complex and highly dependent on the local context within the game and the type of information most likely to help the questioner at that point. The only significant difference between the above realization rule and the preceding one is in the lack of direct 'unmarked' form. Several of the examples given are compound helping 'moves' involving more than one act (see Chapter 4) - e.g. the Game 33 one, where a Propose Action is followed by a rhetorical Request Confirmation (an attention-confirming device) and a (re-) statement of a fact helpful to the guesser. Only the first and third components are realizations of Give Help, the central one being an independantly motivated discourse element introduced according to its own discorsal 'activation' conditions.

Again we must allow for the hearer's computation of the primary force behind these utterances in as far as he may not recognize them as in any sense 'typical' realizations of Give Help out of context (and they may not be on his own active 'repertoire' for the latter act)¹. Take, for example, the utterance from Game 41, here with full context:

B: 'George the Fourth Bridge?'
 → A: 'No! What's it made of?'
 B: 'The Forth Bridge?'

¹ We must also be able to account for speaker creativity in devising essentially new realizations for an act he already 'controls', knowing that the hearer will be able to compute their force according to shared background knowledge and cooperative principles.

α : 'The Forth Rail Bridge'!

β clearly expects a yes/no answer to his game question at this point; he gets this, but is immediately asked a question himself, which is not expected. As in the Game 36 example earlier, he assumes that α is being cooperative and therefore relevant, and searches for an appropriate act that the utterance might be performing. Even if he can't find one at once he can always try treating the utterance as a 'neutral' Request Information according to its form (ASKWh), the appropriate response to which is the search for - and potential expression of - the corresponding answer. We can assume that this process is initiated in parallel with his search for the primary force of the utterance (at a different level). In fact, finding the answer to α's question will act as a reminder of a piece of information he has already been given which immediately rules out, once he recalls it, all but one possible solution to the game, and he can formulate his final question accordingly, without answering the utterance as a Request Information, but without needing to bother further about the primary force behind the unexpected utterance. Solving the game problem is his overriding concern during this 'heated' final stretch. In retrospect β may recognize this act (more directly a Remind) as a token of Give Help, since it has helped him (and he knows α is in general being as helpful as possible towards him); Give Help is an expected (answerer's) act for the game - it is even specifically mentioned in the rules. As argued in Chapter 2, this 'remote' kind of act is distinguished from more conventionalized ones by it not being essential that the hearer recognize the speaker's intention to perform the act in order to respond appropriately (though not doing so would constitute only partial uptake)¹. In the present case the primary force from the speaker's point of view was Give Help, but as far as the hearer is concerned it may simply have acted as a Remind, the ulterior intention behind it (whether of helping, warning, objecting, etc.) being unimportant for his more pressing goal of guessing the object. The fact that Remind is a possible realization of Give Help may or may not be recognized by the hearer. Note that there are consequently three levels of interpretation of the utterance, not just one primary and one literal: it is a

¹ The speaker may even decide to point out in retrospect that his utterance was meant as a Give Help - as in G.3, where the hearer could have taken it as a Confirm (to a recap), and responded appropriately.

case of giving help by reminding with an utterance of Wh-interrogative form. We are certainly not obliged to envisage any special conversational convention to the effect that a Wh-question Request Information is (under certain conditions) to be interpreted as an act of giving help¹.

One useful outcome of examining indirect acts in the data is the emergence of a number of new acts which are performed either as realizations of acts we have already encountered, or concomitantly with them. The method is self-expanding. Thus, for example, we have come across cases of prompting or urging. We can set this up tentatively as a discrete discourse act 'Prompt', look for further tokens of it in the data in order to formulate a corresponding realization rule, then check that it isn't completely subsumed (as regards propositional content constraints and response set) by some other act already justified. If these conditions are met we can utilize the new act as an explanatory element in the model (until, perhaps, it can be shown, on independent grounds, that it can be subsumed under some act of wider scope not yet postulated). In the data, then, we come across the following tokens of the new act (all more or less indirect):

G.24: 'You're not answering...'

G.40: 'Well, what's it called?'

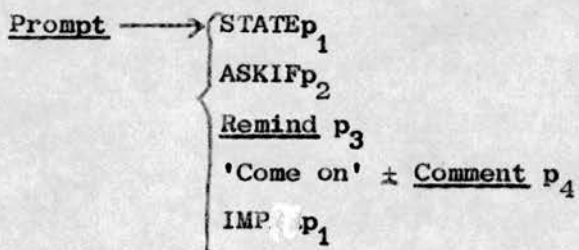
G.3: 'Well, you must answer it!'

G.13: 'That's not the answer.'

G.36: 'Come on, this is limited!'

G.49: 'You've got two left, come on, stop thinking out loud! You're not going to get it.'

Based on these examples we can formulate a realization rule:



where '_{p₁}' refers - directly or indirectly - to an action the hearer is supposed to perform (but hasn't yet); '_{p₂}' is a proposition necessary for the hearer to ascertain (in order to fulfil his game goal); '_{p₃}' refers

¹ The primary force being computed here is not illocutionary (no one would wish to call Give Help an illocutionary act, I presume).

to the rules of the game, and 'p₄' to the current situation. 'IMP' is the imperative form - it and 'come on' may be regarded as unmarked forms in as far as they are recognizable as realizations of the act even outside of a context. In all these cases the speaker presumably believes the hearer will not perform the relevant action immediately without being urged; this sincerity condition must be relatable to the game's 'Meta-frame' which allows/recognizes that prompting may be necessary at suitable points during the game.

If we now ask whether we are justified in treating Prompt henceforth as a distinct discourse act, we can answer affirmatively: as regards response set it is typically followed by the performance of the action wanted by the speaker, but, as opposed to the case of a 'general' Request Action, this action will be contextually expected anyway (barring the case of a misunderstanding) - the point of the act is to hasten the expected action. As regards propositional content, the conditions entered on our realization rule serve to distinguish tokens of this act from those of 'neutral' acts such as Make Statement and Request Information, which have no such conditions and do not appear on the right of realization rules (forms such as STATE and ASKIF appearing instead).

There remain a number of points concerning indirect speech acts to be discussed in the light of generalizations linking form with function made by other investigators in this area. They center around the controversy over how these generalizations are to be related to the grammar of the language concerned. As we shall see this is really another manifestation of the argument over convention versus intention already met in Chapters 1 and 2.

The formulation of our realization rules so far has been intentionally grammar-free and based solely on distributional and procedural (hearer-recognitional) reasoning. But there are generalizations to be made about the semantico-syntactic outputs of these rules which might ultimately simplify them when extended to cover more and more data. Thus it is well known that the most common 'indirect' means of expressing requests correspond rather nicely to the felicity conditions for the performance of such (directive) acts. Clark and Clark (1977) summarize Searle's (1975) findings in this area, stating the methods by which

A can indirectly request B to perform an action¹:

- 1) Ability. A asserts that he (B) is able to do the action, or asks B whether or not he is able to do that action.
- 2) Desire. A asserts to B that he wants him to do the action.
- 3) Future Action. A asserts to B that he will do the action, or asks B whether or not he will do the action.
- 4) Reason. A asserts to B that there are good reasons for doing the action, or asks B whether or not there are good reasons for doing the action.

The corresponding felicity conditions are that A must:

- 1) believe that B has the ability to do the action (preparatory)
- 2) have the desire that B should do the action (sincerity)
- 3) believe that B will perform the action if requested (propositional?)²
- 4) have good reasons for B to do the action.

This last condition does not, of course, correspond with Searle's own fourth felicity condition, namely the 'essential condition', whereby the utterance must 'count as' an attempt by A to get B to do the required action (though it is related to his other conditions). Performative formulae such as 'I ask/beg/request you to - 'might be said to correspond to this condition, but they would presumably be treated as 'direct' realizations of a request by Searle (they embody direct 'illocutionary force markers' for the act), regardless of the fact that in English they are actually less common and less socially 'unmarked' than the corresponding 'indirect' realizations (see below).

Clark and Clark go on to summarize the (widely accepted) approximation of the procedures whereby the primary force of such indirect acts might be computed by the hearer:

Step 1: Compute the direct (literal) meaning of the utterance.

Step 2: Decide if this meaning was intended. Are there sufficient

¹ In his article Searle has moved much closer to the 'computation of intention' approach; he now speaks of convention as simply determining the particular choice of forms available in a given language corresponding to the indirect request categories below.

² A poor statement; Searle has 'S predicts a future action A of H' - but the general match between felicity conditions and indirect realization types is not as transparent as in Clark and Clark.

and plausible reasons for the speaker to have intended to convey this meaning(alone)in this context?

Step 3:If not,compute the indirect meaning by way of the cooperative principle and the conventions on speech acts.

Step 4:Utilize the utterance on the basis of its indirect meaning.

I have already argued that such steps are not always necessary if contextual expectations can bypass them or if the hearer recognizes the utterance at once as a possible realization of the primary act intended;we have also seen that it is in some cases difficult to state exactly what the 'literal' force of an utterance is in the first place¹.But something comparable to these steps must in other cases be envisaged.What is important here is to see how such a procedural approach correlates with the generalizations discussed above and with others such as the following from Labov(1970):

If A makes a request for information of B about whether an action X has been performed,or at what time T X will be performed,and the four conditions below hold,then A will be heard as making an underlying form 'B:do X!'

(The four conditions mentioned are:)

- 1)X should be done for a purpose Y
- 2)B has the ability to do X
- 3)B has the obligation to do X
- 4)A has the right to tell B to do X

There are two questions one might ask about this kind of generalization.Firstly,as to why there should be such a close connection between felicity conditions and indirect realizations of speech acts,and,secondly, as to how such generalizations(given that they really do hold)can be related to sentence grammar.Answering the first of these,via an examination of how Searle sees them as being actively utilized by the hearer in procedural terms,will help explain why certain kinds of utterances tend to be used to perform certain acts.This will lead us to consider the second question,in response to which 'conversational postulates' have been proposed by some linguists to relate their sentential deep

¹ e.g. is a game question of STATE form literally a token of Make Statement or simply (as I assume) a possible realization of Game Question in the context of 'Twenty Questions'?

structures to indirectly performed functions. We will then be able to ask whether our realization rules do capture the generalizations revealed by linguists and in doing so adequately allow for interfacing with a sentence grammar (however characterized).

Let us start, then, with Searle's (1975) example of how a hearer might be able to compute the primary force of an indirect request for somebody to pass the salt at the dinner table - namely the utterance 'Can you pass the salt?' His inferential sequence is as follows:

Step 1: Y has asked me a question as to whether I have the ability to pass the salt (fact about conversation).

Step 2: I assume that he is cooperating in the conversation and that therefore his utterance has some aim or point (principles of conversational cooperation).

Step 3: The conversational setting is not such as to indicate a theoretical interest in my salt-passing ability (factual background information).

Step 4: Furthermore, he probably already knows the answer to the question is yes (factual background information). (This step facilitates the move to step 5, but is not essential.)

Step 5: Therefore, his utterance is probably not just a question. It probably has some ulterior illocutionary point (inference from steps 1, 2, 3 and 4). What can it be?

Step 6: A preparatory condition for any directive illocutionary act is the ability of H to perform the act predicted in the propositional content condition (theory of speech acts).

Step 7: Therefore, Y has asked me a question the affirmative answer to which would entail that the preparatory condition for requesting me to pass the salt is satisfied (inference from steps 1 and 6).

Step 8: We are now at dinner and people normally use salt at dinner; they pass it back and forth, try to get others to pass it back and forth, etc. (background information).

Step 9: He has therefore alluded to the satisfaction of a preparatory condition for a request whose obedience conditions it is quite likely he wants me to bring about (inferences from steps 5 and 9).

Searle himself points out that it is probably not in fact necessary for the hearer to work through all these steps one by one (at least

not consciously) in a given conversational situation. This rather begs the question, however, of how the hearer might bypass any of the steps. This would be accounted for on our model in terms of contextual expectancies (to be formalized as 'frames' in Chapter 4): polite requests for passing objects at the dinner table - an 'expected' action in that context - are typically realized as ASKIF 'can'¹ + 'you' + p (where 'p' refers to the action requested), and this can be entered directly on the realization rule for Request Action, with any relevant contextual conditions marked. Similar entries can be made for the other main types of 'indirect' request. But why do the latter correspond in the way they do to the felicity conditions on the act performed (the motivation behind the crucial steps 6 and 7 in Searle's example)? One could develop here an ontogenetic and diachronic explanation, to the effect that it would be formulae relating most closely to the felicity conditions attending the performance of an act whose 'primary' force (given the natural tendency to soften demands for social reasons of politeness, etc.) could be worked out most easily by a hearer according to context and basic principles of conversation even if he were unaware of the conventional force/status of those formulae. They would therefore readily tend to become conventionalized in that language. The force behind more indirect means of expressing a request (e.g. 'There's not enough salt in this soup') will have to be computed this way in any case, since it is not possible to make generalizations wide enough to cover all possible means of requesting the salt, for example. In fact, any minimal utterance like 'The salt...' or even a paralinguistic gesture may be sufficient to perform the act. In other words, Searle's steps 6 and 7 could be put into even more basic procedural terms: having been asked if he is able to perform an action, and knowing that the asker has probably no interest in that ability as such, the hearer will nevertheless be able to see that the action itself is of interest to the asker from the way the latter is looking or nodding towards the object, for example, or hesitating to eat up (he himself might have the same interest, in the context of dinner). For general social (rather

¹ It is safer to indicate specific lexical items here since, for example, 'Are you able to pass the salt' is not a colloquial realization of this act (though its force could be computed according to basic principles); cf. Sadock (1974).

than strictly linguistic) reasons of cooperation¹ he may then comply, even if he hasn't heard exactly what was said to him.

The argument for more abstract entries in our realization rules reflecting Searle's generalizations about the relation between felicity conditions and indirect realizations is, in the light of the preceding, not very convincing. If the hearer is capable both of recognizing the primary force of an utterance from basic principles of cooperation and context/background information and of recognizing conventional formulae as realizing the act in question directly (i.e. as entered on the right of a realization rule), there seems little need to indicate in our rules the more abstract generalizations as well. The fact that the most common realizations of requests do correspond to felicity conditions on the act concerned can be explained in historical terms and need not be related to rules or procedures productive in the hearer's computation of the primary force of utterances tokening the act.

Turning to the question of the interface with sentence grammar, we find that the problem of the absence of a class of indirect speech act realization corresponding to Searle's 'essential condition' may be symptomatic of the difficulties lurking whenever an attempt is made to relate pragmatic force to underlying sentential deep structures, thus dissolving the distinction between semantics and pragmatics (as Searle himself tries to do). Although most linguists would agree upon the need to introduce the notion of very general conversational principles² and of shared background information to account for the hearer's recognition of indirect speech acts, some (in particular those adhering to some version of Generative Semantics) have gone further and attempted to introduce generalizations such as those we have been examining directly into their sentence grammars. Thus 'conversational postulates' integrating 'natural logic' with the language system itself have been proposed by Gordon and Lakoff (1975) to convert (by trans-derivational rules) performatively marked deep structures into others corresponding to the primary force of the (indirect) utterance concerned. These are, essentially, generalizations such as we have observed above expressed in a logical form compatible with Generative Semantics. Others,

¹ i.e. he may comply following the merest grunt and nod, etc.

² Such as Grice's four maxims of 1) quantity, 2) quality, 3) relation (relevance) and 4) manner

such as Sadock(1974), have proposed purely grammatically derived deep structures to account for indirect speech acts - e.g. the conjunction of a question and a mand(request or command) underlying an indirect 'requestion'. But in either case it is difficult to see how such discourse-level facts are to be accounted for as the one already mentioned, to the effect that the overt performative utterance 'I ask/beg/request you to pass the salt' is not the most 'neutral' or directly interpretable way of making a request for the salt in English. In fact it is highly marked and would most probably spur the hearer into further attempts to calculate why on earth the speaker used such an unusual form, whereas such 'indirect' realizations as 'Would you mind passing the salt' would be instantly transparent and responded to accordingly. Moreover, well- and ill-formed sentences adduced as evidence for conversational postulates are not always convincing, as one can generally think of situations where the 'ill-formed' ones might be acceptable (especially when one considers simultaneous 'blends' of more than one act)¹. The point is that sometimes (according to complex discourse factors) a conversational postulate - e.g. $ASK(a,b,CAN(b,Q)) \xrightarrow{2} REQUEST(a,b,Q)$ - will correctly predict the force of an utterance of a given form and sometimes it will not. It is also unlikely that any finite set of such postulates could cover all indirect realizations of a given act. The generalization is captured at the expense of being able to characterize how and when a hearer might make use of it in interpreting a given utterance type in context (something which Gordon and Lakoff should presumably be concerned about if they are to justify their procedural notation). This is an instance of the rule-based, 'conventional' approach to speech acts trying to oust the more heuristic 'intentional' approach completely. The lack of solid ground in this area of linguistic speculation is pertinently expressed in Sadock's article in the same volume (1975) as Gordon and Lakoff's paper.

We still have to account somehow for generalizations relating form and function such as those above, and conversational postulates are basically just explanatory devices for handling the corresponding conver-

¹ e.g. Gordon and Lakoff's examples of utterances that purportedly can't be used to make a request: 'Ought you to take out the garbage?' and 'I suppose you're going to take out the garbage.'

² where Q is some future action to be performed by 'b'

sational 'implicatures' noted by Grice(1975).But if we ask whether the introduction of conversational postulates would simplify our model,we must answer no,So many highly context-specific postulates would have to be set up that it would soon become more economical to specify procedures whereby primary force can be computed according to basic conversational principles and contextual expectations, and to list the most conventional forms as 'direct' realizations of the act in question.And this is exactly what our realization rules attempt to do.Thus,if we want to account for Searle's example of requests to pass the salt,we can formulate a rule as follows:

Request Action → { IMP p ± 'please' + Int
ASKIF 'you' + 'can'/'could'/'will'/'would(mind)'
+p ± 'please'
STATE 'I' + 'want'/'would like' + 'you' + 'to'p
STATE 'you' + 'can'/'might' + p
ASKWh 'Why' + 'you' + Neg-p

where 'p' is the action requested and 'Int' those intonational patterns associated with requesting¹.Situational conditions relevant to choice of realization (e.g. degree of politeness)could be indicated appropriately.There are of course many other ways of expressing a request for action;those listed simply cover the most conventionalized formulae. The difference between this kind of solution and most others is that it circumvents computation via 'literal' force except in less conventionalized cases,when cooperative principles and background knowledge can be invoked.This allows us to keep our realization rules down to a reasonable size whilst allowing for the performance and recognition of the act via more indirect means;interfacing with grammatical forms is ensured without burdening sentence grammar with pragmatic rules.In other words,the model attempts to integrate both the conventional and the intentional aspects of discourse in its representation of the relationship between form and function for the data.How this works in practice will be seen in the following chapter,where the question of discourse analysis as such is addressed.

¹As Searle has pointed out,intonation may be a direct clue as to the primary force of an utterance when it differs from that associated with the 'literal' force.It should therefore be entered on our rule.

Chapter 4

The analysis of discourse involves two essential methodological steps: a) the choice and functional definition of distinct acts to describe the force of all utterances within the data, and b) the choice of and functional definition of discourse units of hierarchical level or rank above the individual act. We have already discussed criteria for a). Turning to b), we find that sociolinguists and ethnomethodologists analysing particular domains of discourse have suggested a varying number of levels, ranging from two (Hymes' 'act' and 'event' (1970)) to six (Coulthard and Ashby's 'act', 'move', 'exchange', 'sequence', 'transaction', and 'interaction' (1973)). Perhaps the most successful of such hierarchical analyses is that of Sinclair and Coulthard (1975) for classroom discourse, which, being highly structured under the control of one participant (the teacher), falls rather neatly into a five-rank structure (those mentioned for Coulthard and Ashby above, minus 'sequence').¹ Each of their units of higher rank is defined as to function and syntagmatic structure and is related to the next rank below in terms of structural 'slots' which can be filled by named units from that lower rank. We shall attempt an analysis of one of our games along the lines they propose in order to see whether a strictly hierarchical analysis is sufficient to account for hearer recognition (and, ultimately, speaker production) of the discourse acts found within the game context. 'Acts', 'moves' and 'exchanges' will be concentrated on as the higher ranks of 'transaction' and 'interaction' (i.e. 'lesson' for Sinclair and Coulthard's data) are problematical when applied to 'Twenty Questions', though a single game could conceivably be termed a 'transaction' and the recording session (including introduction to the rules, practice run and post mortem discussion) an 'interaction'.

As a first approximation to defining higher units above that of acts for our data we can propose the moves 'Guess' and 'Give Answer' (as opposed to the acts usually realizing them, Game Question and Answer)², whose sequential coupling constitutes a "Game Exchange". This certainly captures the basic framework of the game as defined by the rules. However, one must be careful here to distinguish between moves

¹ Other domains that have been analysed in some detail are radio and TV interviews (Pearce, 1973), doctor-patient interviews (Coulthard and Ashby, 1973), and committee meetings (Stubbs, 1973).

² Moves henceforth in single quotes, exchanges in double quotes

and roles, as in Sinclair and Coulthard's analysis one move type is nearly always associated with one role-bearer (e.g. 'Opening' with the teacher). Clearly it is the role of the questioner to guess and of the answerer to answer, but can we define the corresponding moves so that the function of any of the questioner's utterances falling under the 'Guess' slot of the exchange, for example, can be said to serve the function of that move - of furthering the questioner towards guessing the game object? In all except the simplest, strictest games (such as those simulated by the program OG) this is not really feasible, as can be seen from the following (incomplete) list of single-act move fillers. The acts in brackets either mark 'excursions' from the basic pattern of the game or are responses to such excursions (respectively indicated by small arrows to the right or to the left of the brackets)¹. The answerer's obligatory initial move announcing 'animal, mineral or vegetable' is not included here.

<u>'Guess':</u>	<u>'Give Answer':</u>
<u>Game Question</u>	<u>Answer</u>
<u>Recap</u>	<u>Claim Inab. to Comply</u>
<u>Make Inference</u>	(<u>Give Help</u>)
(<u>Request Confirmation</u>)→	(<u>Request Rephrase</u>)→
(<u>Request Rephrase</u>)→	(<u>Request Information</u>)→
(<u>Request Information</u>)→ (e.g. as to	(<u>Request Confirmation</u>)→
→(<u>Answer</u>) count)	(<u>Object</u>)→
(<u>Request Help</u>)→	(<u>Declare</u>)
(<u>Comment</u>)	→(<u>Justify Self</u>)
→(<u>Confirm</u>)	→(<u>Confirm</u>)
→(<u>Rephrase</u>)	(<u>Prompt</u>)
→(<u>Admit</u>)	(<u>Offer Help</u>)→
(<u>Object</u>)→	(<u>Recap</u>) (for questioner)
	→(<u>Rephrase</u>)

We are obviously going to have to account for a variety of excusional 'side sequences' (cf. Jefferson, 1972) that cut right across the basic exchange pattern of the game and can consist of acts (such as those concerned with determining the count) not tied by their nature to one role rather than the other. We can nevertheless continue with a hierarchical analysis of the game, provided we allow for the basic

¹ Those without arrows are isolated acts that nevertheless interrupt the basic game exchange pattern.

exchange pattern(alternate 'Guess' and 'Give Answer' moves) to be suspended for the duration of such 'extra-ludic' excursions.To do so we must examine examples(such as those already encountered)of 'compound acts' in the data - where more than one utterance with more than one function are produced by a speaker during his 'move'.Such acts found in one game (Game 20)follow,with multiple-function acts marked with a single vertical brace.Mere repetition or the realization of one act by more than one sentence-length utterance will not be considered here.¹ The function of the two role-tied moves under which they fall('Guess' and 'Give Answer')can be defined respectively as 'furthering the questioner towards guessing the game object' and 'responding to the questioner's moves according to the rules of the game'.

'Guess':

	[<u>Req.Rephr.</u>					
<u>Express Surprise</u>	+	<u>Req. Conf.</u>	('My goodness.Yes,but not necessarily?')				
<u>Express Difficulty</u>	+	<u>Game Q.</u>	('I'm stuck completely!..Can it be only male?')				
<u>Make Inf.</u>	+	<u>Express Diff.</u>	+	<u>Game Q.</u>	+	<u>Rephrase</u>	('It can be male or female...This is ridiculous!Is it alive - or is it a live or dead human?')
<u>Req. Confirm.</u>	(Rhet.)	+	<u>Make Infer.</u>	²			
			[<u>Req. Conf.</u>			('It's alive?So it's not a corpse or anything like that.')
<u>Echo</u>	+	<u>Game Q.</u>					('It's very close...Is it in this room?')
<u>Object</u>	+	<u>Justify Self</u>	+	<u>Rephrase</u>	+	<u>Req.Permiss.</u>	('Cheat!I don't see how it could be me and not me.I don't see how it could only be me 'sort of'.Can I give up?')

'Give Answer':

Confirm + Rephrase ('Yes,it's a member of the class 'human'but it

¹ Some of these examples combine response to one sequence with initiation of another(e.g. the last one under 'Guess').

² There is a general problem in cases such as this as to whether to mark a Req.Conf. as also a Game Q.(or,as below,a Rephrase as also a Give Help)as it is largely up to the hearer how he treats them,regardless of the speaker's intention.The subsequent response will often give some clue as to how it was taken.

need not be restricted to the class
'human'.)

Answer + Comment ('Uhuh.You're very close.')

Give Help + Rephrase + Indicate ('It's not entirely you.It's not
you as a whole.That's a big clue.')

Confirm + Reason Out Loud + Apologize + Restate ('No,in fact,oh
Correct Self

no -i.e. ¹ - 'i.e.'means 'that is' - so it's definitely
human.I'm sorry.It's definitely human.')

Answer + Rephrase ² ('Yes.Part of it,yes.')

Answer(hedged and expanded) + Declare ('Well,I suppose you
State Intent

might,but it would look most peculiar.I'll say no to that.')

State Intent + Req. Permiss. + Give Reason + Give Help ('I'll give
you a big big clue,OK?So's you get it right.Well,it's prominent.')

By examining a large number of such compound acts within the data and separating out the 'excursions'(inclusion of which would greatly complicate an analysis of possible structural 'slots' within the "Game Exchange")we arrive at the following - no doubt still incomplete-description of the acts that can combine to constitute a single 'Guess' or 'Give Answer' move.More than one optional element can be chosen, and,apart from a few specific cases such as 'State Intent + Recap +', there would appear to be no clear constraints on ordering other than those marked here by __+ (=followed by an obligatory element) and +__ (=following an obligatory element).It is possible that examination of a still wider corpus of data might reveal more local constraints on the ordering of elements within moves.Following Sinclair and Coulthard, we can call the left-hand elements a structural 'pre-head',the obligatory elements the 'head',and the right-hand elements a 'post-head'.

'Guess':

Obligatory: Game Question or Req.Confirm./Make Infer./Recap taken as
a Game Q. by the answerer(or Recap curtailed by a Give Help
intervention by the answerer)

¹The speaker is checking the printed rules here

²See footnote 2 on the previous page

Optional: Echo+ +Rephrase/Expand¹
Express Difficulty+ +Give Example
Express Surprise(etc.)+
Reason Out Loud +
Make Inference+
Req. Confirm.(Rhet.)+
(State Intent.)+Recap+
Comment+²
Procrastinate+

'Give Answer':

Obligatory: Answer or Claim Inability to Comply
Optional: State Intent+ +Declare²
Req. Confirm. (Rhet.)+ +Rephrase/Expand
Comment+ +Echo
Procrastinate+
Echo+
Reason Out Loud+

Some of the excursion types (consisting of acts themselves expandable beyond single utterances) that cut across the "Game Exchange" are the following:

Req. Rephrase \Rightarrow Rephrase
Object \Rightarrow Admit/ Justify Self, etc.
Remind \Rightarrow Acknowledge
Req. Info. \Rightarrow Answer
Req. Confirm. \Rightarrow Confirm
Req. Help \Rightarrow Give Help, etc.

There are difficulties when one tries to formulate these excursions as 'exchanges' of the same rank as "Game Exchange". Besides the problem of embedding, treated below, it is difficult to characterize their internal structure in terms of functionally definable move slots, due to the variety of patterns encountered (some involving more than two moves)

¹Already incorporated in the realization rule for Game Q, it is so common

2 A Comment is distinguishable from a Make Statement by propositional content: it must refer to the current situation. A Declare is, on the other hand, made by a speaker with the authority for its proposition to be binding.

for realizing their function. Thus in the case of a hypothetical exchange type "Assist" consisting of a 'Request Help' and a 'Give Help' move (typically realized by acts of the same name as their 'heads')¹, we find we have somehow to relate to these 'slots' such response sequences found in the data as Offer Help \implies Accept/Refuse \implies Give Help/0 . Similarly for a hypothetical "Determine Count" exchange, where we find such alternative patterns as Req. Information \implies Answer , Req. Confirm. \implies Confirm, or simply Declare (\implies Acknowledge). These are not easily relatable to functionally constant move slots, since in the third case of the latter exchange, for instance, the initiating speaker is giving rather than requesting information (as in the first two). Rather than introduce problematical move and exchange labels here (the move labels being largely redundant in any case, echoing the 'head' acts they contain), I shall simply leave open the possibility of describing these excursions in terms of exchange types. The acts involved have their own response sequence requirements regardless of which role-bearer in the "Game Exchange" initiates them. I shall also leave open for the time being the possibility of describing the obligatory kernel acts of such excursions as move 'heads' (as opposed to primary acts expandable according to their own realization rules).

Below, a Sinclair and Coulthard style analysis of one game (Game 28) is presented. It will be seen that the analysis works well for the basic game exchange (corresponding to Sinclair and Coulthard's "Elicit" exchange) if one allows for suspension of the latter for excursions. These are contained within square brackets. The exchange type is marked on the left and the two wide columns contain 'Guess' and 'Give Answer' moves respectively. Acts realizing these moves are indicated in the narrower columns to their right. The final Comment following the game itself can be regarded as belonging to a new 'transaction'.

	'Guess'	'Give Answer'	
(Announce)		The object is animal. ²	<u>Announce</u>

¹ Or, alternatively, by lower level acts such as Express Difficulty or Make Statement, but here the number of possible realizations escalates enormously.

² Not strictly a 'Give Answer' move, but bound to the answerer role

Game Ex.	Is the object in this building?	G.Q.	No.	Answer ¹
"	Is it in Edinburgh?	"	Not as far as I know	"
"	Is it in Britain?	"	Yes, as far as I know.	"
"	Is it a specific object?	"	Yes.	"
"	Is it larger than your briefcase?	"	Yes.	"
"	Is it larger than a house?	"	No.	"
"	Is it useful?	"	I can't answer that question! [Do I have to answer that question?	C.I.to C. Req. Perm.
"	So the question doesn't count...	M. Inf.	No.]	Acknow.
"	Is it useless?	G.Q.	I can't answer that question either!	C.I.to C.
Game Ex.	It's between the size of a briefcase and a house; in Britain; specific...	Recap	[And it's animal.]	Recap
"	And it's animal. Is it a living animal?	Echo G.Q.	Yes.	Answer
"	Is it a person?	G.Q.	Yes.	"
"	[How many questions have I had?	Req. Inf.	Eight.]	"
"	Is this person involved in politics?	G.Q.	I have to give an expanded answer. This person <u>shouldn't</u> be involved in politics.	State Int. Answer
"	Is this person male?	"	No.	"
"	The Queen?	"	No.	"

¹ Sinclair and Coulthard's 'Reply'

Game Ex.	...female...shouldn't be involved in politics-[that wasn't really very fair, was it?] Does this person live in London?	<u>Rec.</u> <u>Comm.</u> <u>G.Q.</u>	I don't know.	<u>C.I.to C.</u>
"(A)	[So that doesn't count] I think - I'm recapping -you did say that this person was not in Edinburgh but was in Great Britain...	<u>Decl.</u> <u>Comm.</u> <u>Indic.</u> <u>Req.</u> <u>Conf.</u>	As far as I know, yes.	<u>Confirm</u>
	Is it a person involved in entertainment?	<u>G.Q.</u>	No...No.	<u>Answer</u>
"	Is it Princess Margaret?	"	No.	"
"	Is it a person in the academic world?	"	No.	"
Game Ex. (B)	Is it a specific person? I mean have I got to get a name?	" <u>Rephr.</u> <u>Req.</u> <u>Inf.</u>	Yes. [That's not counted as a question, 'cos	<u>Ans.</u> <u>Decl.</u> <u>(Give Reason)</u>
	Not counted. But it might be a mother or-	<u>Echo</u> <u>Just.</u> <u>Self</u>	No, no, no. I mean it's not one of a class of objects.]	<u>Deny</u> <u>Expand</u>
"(C)	...not politics, not entertainment(etc.)... not entertainment means not sport, very likely... Yes.]	<u>Rec.</u> <u>M.Inf.</u> <u>Give Perm.</u>	[I'd be giving you a clue next question - can I give it to you now? Because of something you've just said. I hadn't thought of sport as being entertainment...	<u>State Int.</u> <u>Req.</u> <u>Perm.</u> <u>Give Reason</u> <u>Give Help</u>

Game Ex.	No. [I was just thinking of possible fields for well-known women.]	<u>Ackn.</u> <u>Just.</u> <u>Self</u>	So when I said 'not entertainment' I was not excluding sport.	<u>Give Help</u>
"	That's my clue... So it's a woman who's involved in sport. Is it Princess Anne?	<u>Ackn.</u> <u>Comm.</u> <u>M. Inf.</u> <u>G.Q.</u>	Yes. [When you started asking 'Is she - is it useful or is it useless'! (etc.)]	<u>Answer</u> <u>Comm.</u>

Note in particular the overlapping at the beginning of exchange (A), where 'So that doesn't count' belongs to the previous excursion; the incomplete/cancelled game exchange at (B); and the double embedding that follows (C), where the head of the questioner's 'Guess' move - i.e. the next Game Question - is postponed for two complete excursions, themselves embedded in a third (whose head is Give Help). The players can recognize that the game exchange has been suspended at these points due to the form and propositional content of the utterances marking the initiation of the excursions concerned. Until the appearance of its head (Game Question) the original game move 'Guess' cannot be completed.

Now Sinclair and Coulthard's method of analysis does allow for what they call 'bound exchanges' (with headless opening moves - or \emptyset in that position), which represent a certain kind of embedding, as in the following example of a 're-initiation exchange' (the teacher is asking about road signs):

(Opening)	(Answering)	(Follow-up)
This is a super one. Isabelle. Can you think what it means?	Does it mean there's been an accident further down the road?	No.
	Does it mean a double bend alone?	No.
Look at the car.	Slippery roads?	Yes.

Here the re-initiation ('Look at the car') shares the same head ('Can you think what it means?') as the previous eliciting exchange. But the function of such an exchange meshes directly with that of the preceding (e.g. eliciting) exchange. It is really an expansion of a prior exchange and not an 'excursion' in our sense at all. The problem rem-

ains then, that although the basic game exchange pattern can be captured in terms of discourse units of higher rank and their functional 'slots', locally conditioned/activated response sequences (excursions) do interrupt it, rendering the hierarchical structure alone insufficient to generate the games of our data: it cannot predict the environments in which such excursions will occur. This is, of course, not one of the aims of discourse analysis as such, but is certainly relevant to procedural modelling.

Various types of embedded sequences have been studied by Schegloff (1970) and Jefferson (1972). The former discusses 'insertion sequences' of the general form $Q_1 - Q_2 - A_2 - A_1$ such as the following:

A: I don't know just where this address is.

B: Well, which part of town do you live in?

A: I live at four ten East Lowden.

B: Well you don't live very far from me.

Here the first utterance is a request for clarification and the embedded question and answer are a 'presequence' to the final clarification. A recognizes that the second question is initiating a pre-sequence relevant to the clarification he has requested because of his knowledge of the sort of 'work' required on the part of the clarifier for specifying locational information (i.e. gathering material relevant to formulating that clarification).

Jefferson examines another type of 'side sequence' (these having the general form: Ongoing sequence - Side sequence - Return), namely what he calls the 'misapprehension sequence', for example:

A: Why didn't they do anything about that bullet, cause there was another wound.

B: Well, what are they gonna do about it, except remove it - (misapprehension)

A: No! But that means that there was another bullet from a different shot. (clarification)

B's misapprehension of the meaning behind A's 'wisecrack' remark (which would normally have elicited a 'wisecrack' response in return) causes A to clarify what he actually meant. Jefferson formulates a rule for this kind of sequence to the effect that a 'may form'¹ clarification must demonstrate or assert something which repeats part of (overlaps

¹ where clarification is optional since the original utterance could in theory be taken either of two ways

with) the utterance that is misapprehended. It may further be marked by special intonation or markers like 'No, I/that mean(s) - '. Both writers are dealing with fairly free conversational material and therefore do not attempt to relate these local sequences to an overall hierarchical structure. It is precisely this kind of 'embedded' sequence which is apparently precluded (though logically conceivable) in the class-room data of Sinclair and Coulthard (and also in, for example, Pearce's (1973) broadcast interview data).

The same problems of accounting for embedded sequences in a hierarchical structure¹ arise with a 'text grammar' approach to our data (cf. Grimes, 1975, and Van Dijk, 1972). Actual discourse, apart from in certain rigidly controlled situations, would not seem to be generatable in a strictly hierarchical manner (as opposed to formal model-theoretic productions, which may be), whether from a single high-level 'topic' node or from a supra-sentential deep structure on the analogy of a sentence grammar. At least this will not work for even such an apparently structured domain of discourse as 'Twenty Questions': a homogenous rule system capable of generating the actual games in our data would have to be so micro-context-specific in order to account for all local excursions from the game exchange that it would be little less complex than an ad hoc description of each game individually. What is generalizable about all the games - what Van Dijk would call the 'macro-structure' underlying all of them - is the basic exchange pattern described above. But this macro-structure alone cannot generate any of the games in our corpus. There is always going to be a chasm between the isolation of such structures (whether it be for 'Twenty Questions', for descriptions of apartment layouts (Linde and Labov, 1975) or for fairy tales (Lakoff, 1972)) and the characterization of actual discourse, where more than one 'global' structure would appear generally to be involved. The view that discourse is produced by the interaction of different 'macro-structures' and indeed of different systems (e.g. a sentence grammar, a set of discourse rules and principles, the perceptual systems, stored world knowledge, general action schemata, etc.) is gaining ground within cognitive psychology and psycholinguistics (cf. Bever, 1970, and Hurtig,

¹ i.e. of stating the environments in which they are likely to occur and relating the acts/moves involved to one or another of the functional 'slots' of the role-bound game exchange pattern

1977), and our own data seems to support this view unambiguously¹. This is not to say that 'macro-structures' cannot be discovered nor that generalizations concerned with textual cohesion are irrelevant to discourse generation as such; the claim is merely that hierarchically organized generation of real discourse from a single macro-structure or 'topic' node is not a practical proposition. The failure of any fully generative text grammar to have actually emerged along these lines (other than fragmentary formal productions) is symptomatic.

My own solution is in terms of what I shall call 'frames'². These are labelled context structures consisting of 'expected' patterns of interaction within that context, and as such are assumed to belong to Long Term Memory. They do not 'do' the generation for our data, but enter into it in a crucial manner (see Chapter 5 for the notion of 'control structure'). The basic question-answer exchange pattern (a completed game set of which corresponds to a 'transaction', to use Sinclair and Coulthard's term) constitutes the 'Game Frame': it consists of an Announce act by the answerer followed by a regular alternation of 'Guess' and 'Give Answer' moves until the game object is correctly guessed (or twenty exchanges are up), as described by the rules. But this is only one (albeit the principal) exchange pattern in the context of the game. A higher-level frame containing the 'Game Frame' as well as a number of other expected sequences (such as those concerned with giving help, determining the count, objecting to an utterance, etc.) is required; this I shall call the 'Meta-frame' for the game. It contains 'slots' for all the discourse acts and sequences of acts that are predictable from the goal and rules of the game and for those monitoring procedures relating to these acts necessary to ensure the successful/rule-conformal playing of the game. It is conceivable that such a context-specific 'meta-frame' is set up to monitor a wide variety of cognitive activities besides the playing of guessing games. The slots in the Meta-frame are only partially ordered into interactional sequences - according to the response sequence rules

¹ I shall have more to say in Chapter 9 as to how theories about the nature of such interaction are constrained by general criteria for model building as well as by evidence from individual 'micro-systems'.

² Not identical with (though related to) Minsky's structures of that name (1975), nor of course to Sinclair and Coulthard's 'frame' move

for the acts contained within it; each of these acts has its own complex activating conditions and resultant outputs brought with it (in most cases) from outside the Meta-frame context, as described in Chapter 5. In listing the contents of the Meta-frame I shall indicate acts rather than moves, reserving the latter term (as suggested earlier in the chapter) for recursive turns associated with one role-player or the other - i.e. the two acts within the Game Frame, which we shall, reverting to earlier usage, call 'Game Question' and 'Answer' (keeping them between single quote marks). This is partly for the reasons already given concerning redundancy of labeling and heterogeneousness of the relevant exchange types, and partly because our discourse acts as defined are capable of expansion anyway (through optional 'pre-' and 'post-heads'). It should be borne in mind that the following list is not absolutely fixed - not all the slots are necessarily present for a beginner who has just read the rules (how they are derivable from the rules and general knowledge of discourse will be treated later in the chapter). Acts marked '@' are role-bound to either the answerer (here α) or the questioner (here β) - but only indirectly related to the function of the two corresponding moves in the Game Frame. Optional acts are in brackets.

Meta-frame slots:

¹
'Game Frame'

@(β Request Help \Rightarrow) α Give Help

@ α Offer Help \Rightarrow β Accept/Decline \Rightarrow α Give Help / @

Request Information \Rightarrow Answer (e.g. as to count or rules)

Request Confirmation \Rightarrow Confirm

Request Rephrase \Rightarrow Rephrase

Object \Rightarrow Admit / Justify Self

Remind \Rightarrow Acknowledge

Declare (e.g. count)

@ α Prompt

Comment (\Leftrightarrow (counter) Comment)

Each of these acts has its formal (and content) constraints and its own

¹ i.e. α Announce \Rightarrow (recursive) β 'Game Question' \Rightarrow α 'Answer'

particular activation conditions whereby the hearer can recognize that the game exchange has been suspended for the duration of the local excursion involved. The reason why the two frames are best not collapsed into one has already been discussed: the excursion 'moves' cut across the role-tied move slots of the game exchange (Game Frame), and, moreover, all the acts in the Meta-frame apart from the game exchange have the additional property of marking a suspension of that (recursive) exchange pattern. How this solution in terms of frames actually 'works' procedurally will be seen in Chapter 5, where the cognitive nature of the structures here discussed is made clearer.

There is at least one other frame relevant to our data, namely that for ('post mortem') Discussion. The most common slots here are 'Comment \Rightarrow (counter) Comment', though argument sequences (involving such acts as Object, Justify Self, Restate (Position), etc.) and polite Self Blame \Rightarrow Shift Blame sequences are also found. It is possible that other types of situational information relevant to the production of discourse, such as social relationship between the participants, could be formalized in terms of frames, though this has not been followed up in detail. It is presumed that more than one frame can be activated at one time and that during the course of free conversational discourse there will be a continual coming into prominence and receding into the background of a large number of such interactional structures¹, whilst others, closely tied to the external situation, are held constant. Thus for the dinner table situation quoted in Chapter 3 we can assume a frame with slots for 'expected' discourse sequence types at dinner - one of which will be for the passing of objects on the table. But in no sense is a frame meant to capture all possible sequence types within a context: it contains only those that are most conventionalized or expected and as such of use in ensuring rapid recognition by the hearer(s) of the force of utterances (or actions) within that context². The force of less conventional, situation-related utterances will of course have to be

¹ Cf. Goffman (1974), who speaks in very general terms of social frames, and of movement into and out of them.

² There is some similarity here on the discourse level with Wilks' (1973) 'preference semantics': operating at the semantic level of sentence comprehension: the model's frame slots represent a 'preferred' order of expectation of the pragmatic force of utterances of a certain form in the context (Game Frame, then Meta-frame, then isolated acts in the system).

determined according to local discourse context and background knowledge.

The important thing remaining is to see how such structures could in theory be constructed 'from scratch' - as in the case of the absolute new-comer to the game - and added to as experience with the game increases. What the new-comer is given in the printed rules (see the Appendix) is sufficient for him to set up the Game Frame, i.e. alternating yes/no 'Game Question' and 'Answer' moves following an announcement by the answerer as to the material source of the game object and terminating when the object is guessed or twenty game exchanges are up. It follows from the rules and goal of the game that each player knows the game-determined motives of the other during its course. The rules also mention that the answerer may give a more expanded answer if he judges that a simple 'yes /no' is not possible. He is also allowed to give the guesser a clue if at around the fifteenth move he appears to be in difficulty; it is left up to the answerer just how helpful he is going to be. Players are urged to discuss the game's course after it is over if they so wish. The atmosphere in the lab-recorded games was such as to elicit games that were taken seriously by the participants but which were fairly informal as regards the incursion of comments, witticisms and even 'cheating'. Clearly both players bring to bear on their game playing a wealth of background knowledge, including experience with a wide variety of general discourse acts.

At this point the new-comer's Meta-frame for 'Twenty Questions' (given that some such structure is necessarily set up by him to implement the rules) will contain a slot for the Game Frame itself, and possibly one for comments on the course of the game; there will certainly be one for giving help/a clue. Within the Game Frame the move slot for 'Game Question' will be filled by a general discourse act he already has available, namely Request Information (associated conventionally with the yes/no questions mentioned in the rules), but with special propositional content conditions and with special consequences for the game count added to it, thus constituting a new discourse act, as was argued in Chapter 1. It will follow that the corresponding 'Answer' move may be performed by the general act linked to Request Information in the common response sequence for questions, namely Answer, and that this act may be expanded if necessary. The Request Information \Rightarrow Answer sequence has the alternative

second element Claim Inability to Comply or Refuse ;given the nature of the game the new-comer can expect at least the first of these as a possible response.

Again from the rules the new-comer can deduce that somebody must keep count of the twenty questions allowed - this is usually undertaken by the answerer spontaneously, he being the less 'cognitively burdened' of the two during the game, but sometimes the questioner, the more interested partner, does so; often both do separately, and occasionally both forget to. In any case he (or his partner) is likely to want to check the count at some stage during the game, so this kind of exchange may be expected from the outset. In general, both players will want to keep a check on the 'legality' of the other player's moves, so the contingency of reminding the other of the rules or of raising an objection is foreseeable. The possibility of either player requesting a rephrase or expansion or of asking for confirmation of some hypothesis or interpretation of what the other meant by an utterance is derivable from previous experience with question-answer exchanges in general. Similarly for the other expected acts and sequences; but these do not all have to be worked out beforehand - they can be added whenever local conditions produce a 'new' excursion type relevant to the game and the force of the utterance signalling it has to be calculated from basic principles. Recognition of the force of such an excursion-initiating act in the future will be facilitated if it is given its own 'expectation slot' in the Meta-frame.

Finally we must consider how a frame might contain information relating to the felicity conditions of the acts expected in its slots. As mentioned in Chapter 2, the sincerity and preparatory conditions for a number of our discourse acts are already presupposed by the game context itself. In discussing how a new-comer to the game could build up a set of partially ordered expectations (the Meta-frame) according to the goal and rules of the game, it was mentioned that he will know at the outset what the principle motives of the two players will be during the course of the game. In other words, he will know what sincerity and preparatory conditions adhere to the two roles - for example that the questioner will want to obtain certain information in order to further his attempt to solve the game problem and that the answerer will be able to supply that information within certain constraints (respectively a sincerity and a preparatory condition for

a number of our discourse acts). It will therefore not be necessary for the hearer of an utterance that performs such an 'expected' act to calculate every time whether the preparatory and sincerity conditions for it hold locally in order to recognize it as such. He need only determine its formal properties and propositional content to be sure of its probable force within the game context. We can mark the relevant information against the role-tied move slots in the Game Frame as required. This in no way negates the validity of generalizations about sincerity and preparatory conditions on 'speech acts' considered in isolation from contextual frames, but is a matter that should be pointed out here since it will simplify our description of how the model might actually operate.

Let us sum up what has been achieved so far. A method of structural description of our data has been elaborated in such a way as to account - at least in a general sense - for hearer recognition of the intended force behind any utterance within the game context. The hypothetical cognitive structure corresponding to the latter has been characterized as a frame within a frame¹, these latter consisting of expected (sequences of) acts liable to occur within them rather than as a strictly hierarchical structure. We are now ready to make the short jump to a more hypothetical plane upon which each of the acts justified by examination of the data is regarded as a complex, context-sensitive processing module of unknown inner structure, but describable in terms of input conditions and output actions. This move is essential if we are to show how the description we have developed so far to account for hearer recognition of 'what is going on' in the discourse can also be utilized to account for speaker production of the interactional games in our data, something which is not easy to do on a strictly hierarchical model.

¹ This frame structure is perhaps, in a procedural sense, bi-stratally hierarchical, but this is not the same as the descriptive sense of 'hierarchy' we have been concerned with in this chapter.

Chapter 5

The assumption we are now going to make is that each of the discourse acts justified on distributional and functional grounds for the data corresponds in a one-to-one fashion (however indirectly and with however much overlap) with a processing module we shall call a 'demon'. This can be taken as an input-output routine activated both in the production of utterances realizing its output conditions (in 'efferent' mode) and in the recognition by the hearer of the force of such utterances (in 'afferent' mode)¹. The term 'demon' does not correspond directly to the processing unit so named by Charniak (1972), but subsumes the latter, which is a 'pattern-invoked' data structure activated by 'recognition' of one element of its structure in parsing a text in such a way that the system will subsequently 'expect' other items from that structure to occur (e.g. mention of 'presents' if the demon concerns children's parties and is activated, say, by the word 'party'). In a sense this is what our demons do in the afferent mode: following their activation certain consequent actions can be expected (e.g. that an objection will be raised if a contradictory utterance is made - the activating condition for the demon concerned with objections). In so far as they are active in the production of utterances (in the efferent mode) they correspond to what are called 'productions' in Artificial Intelligence (cf. Newell, 1973), consisting of a condition and a consequent action; but they involve considerably more complexity and context-sensitivity than such rule-like binary units usually do. A system consisting of an assembly of inter-related productions, a 'long-term' data base, and a 'short-time' 'working space' in which external input (corresponding to the conditions on the productions) appears will act as a 'control structure' for the output generated. A control structure is of course specific to certain tasks/goals, and in modelling human cognitive behaviour one would wish to allow for the setting up of control structures for new tasks whenever encountered. This is something our 'meta-frames' can do: they embody the goal of the context-determined task and ensure immediate access to various computational means known - or deducible - to be relevant to achieving it. The slots in our 'Twenty Questions' Meta-frame are filled by (addresses to) particular de-

¹ This may of course involve duplicated or distributed systems in the brain; I am as usual choosing the simplest description to model.

mons(either linked by response sequences or in isolation)and it thereby acts as a control structure for the generation of well-formed games.

In a somewhat different manner the frames in Bobrow et al's program GUS(1976)perform an analogous function in simulating dialogue at a travel agency.In their system(which generates utterances by filling in 'blanks' on templates rather than by syntactic rule - a short-cut adequate for their purposes),the procedures attached to the slots of their frames are called either 'demons' or 'servants',the latter being optional demons activated only on demand according to local conditions. In generating questions to put to the client the system sets up 'expectation slots' for dealing with the answers it elicits,much as our demons are linked by response sequences marked on their input and output conditions within the Meta-frame.The slots in GUS's frames,however,are really labeled blanks for items of information that must be elicited(by the demons and servants attached to the slots)in order for GUS to advise the client as to available flights(its goal).This information can be gathered in a number of different ways -by direct or incidental elicitation - and the system has no 'knowledge' of interactional discourse acts as such:a demon for generating an utterance to elicit an item of information to fill its 'slot' is simply activated by some other demon or servant on receipt of its own slot-filling input.The highest level frame for GUS is labeled 'Dialog' and it in turn 'contains' the two subordinate frames 'Trip Specification' and 'Trip Leg',concerned with eliciting specific information about the client's projected journey.The slots of these frames do not correspond to discourse acts at all.In fact very little work,beyond simple question-answer programs,has yet been done in implementing discourse simulation as such¹;consequently the model I am proposing is considerably more ambitious than the program actually implementing part of it.For the model to be fully simulatable on the computer a number of routines would have to be incorporated into the Meta-frame corresponding to such cognitive procedures as checking the legality of moves and of searching for motives behind the other player's utterances,etc.But as these remain inaccessible to observation the model does not attempt to press further than the modelling of overt discourse acts - it is

¹But cf.Power's robot dialogue simulation(1974)and Lehnert's recent work with Schank(1977)

only up to that point that the model is in any immediate sense testable (see Chapter 9).

One further advantage of modelling discourse generation in terms of demons and frames (rather than, say, of unstructured rule lists) - besides that of approaching explanatory adequacy for the data - is that the fundamental notion of input condition plus output action can be used also for the procedural representation of the rules of other subsystems involved in the generation of discourse, for example the grammatical rules of the sentence-generator component. In Part Two I shall attempt to show how a variety of Augmented Transition Network using context-sensitive phrase structure rules of this sort could, along with similarly structured discourse level rules, be involved in the generation¹ of our data. As I've stressed before, such input-output units, embedded within a heterarchical control structure and having context-sensitive output, have little in common with traditional stimulus-response couples.

In order to see how a 'demon' corresponding to a particular intentional discourse function might actually be characterized in terms of input/output conditions we shall look at all the realization types found for two common discourse acts in the data², namely Request Rephrase and Object. These acts overlap to some degree, it will be seen, one utterance sometimes performing both acts simultaneously. But before doing this it is necessary to list all the discourse acts needed for a description of the data, as they will be referred to throughout the chapters following (by the corresponding demon numbers on the left). Next to each entry is an informal description of the discourse function it serves within the data. This is enough to define each act, but, as argued in Chapters 1 and 2, other classificatory criteria have to be adduced for the -not uncommon- case where one act's function is subsumed entirely within that of another. No attempt has been made to group them according to more general functional types (e.g. directives, representatives, etc.).

Discourse Acts for the Data:

D1	<u>Answer</u>	Supply information requested
D2	<u>Game Question</u>	Elicit information relevant to game goal

¹ i.e. real-time production (our definition of this term henceforth)

² We've already examined all the forms Game Question can take (Chapter 1)

D3 <u>Express Surprise</u>	Signal surprise at X's ¹ action/utterance
D4 <u>Object</u>	Signal disagreement with(or rule-breaking nature of)X's utterance
D5 <u>Confirm</u>	Corroborate truth of X's proposition
D6 <u>Justify Self(or X)</u>	Give good grounds for own(or X's)prior action/utterance
D7 <u>Expand/Rephrase</u>	Elaborate prior utterance
D8 <u>Admit</u>	Signal acceptance of proposition previously denied or accusing self of blame
D9 <u>Claim Inability to Comply</u>	Justify non-compliance with request
D10 <u>Acknowledge</u>	Signal assimilation of X's utterance
D11 <u>Restate</u>	Emphasize own prior utterance or summarize after elaboration
D12 <u>Comment</u>	Make statement about course of present game(to make opinion/attitude known)
D13 <u>Give Reason</u>	Supply grounds for proposition
D14 <u>Indicate</u>	Bring X's attention to something
D15 <u>Request Rephrase</u>	Elicit elaboration of X's utterance
D16 <u>Offer Help</u>	Give X option of receiving help
D17 <u>Make Statement</u>	Give information believed(or claimed)to be true
D18 <u>Recap</u>	Repeat propositions known to apply to the game object(to aid formulation of new question)
D19 <u>Echo</u>	Repeat X's utterance(signalling that it is being pondered)
D20 <u>Make Inference</u>	State proposition implied by prior utterance(e.g. for aiding formulation of new question)
D21 <u>Concede</u>	Signal acceptance of X's solution of game ²
D22 <u>Request Permission</u>	Elicit authorized approval for proposed action
D23 <u>Give Permission</u>	Give " " "
D24 <u>Correct Self</u>	Cancel or rephrase own ill-formed utterance

¹ i.e. the speaker's interlocutor

² Or give up (questioner)

D25 <u>Apologize</u>	Signal (conventional) regret at own action
D26 <u>Agree</u>	Signal acceptance of X's proposition
D27 <u>Elicit Agreement</u>	Elicit X's acceptance of own proposition
D28 <u>Request Information</u>	Elicit information (rhetorically: as <u>Reason Out Loud</u>)
D29 <u>Procrastinate</u>	Signal hesitation, preventing X from making his next discourse move
D30 <u>Give Example</u>	Expand proposition with illustrative example
D31 <u>Express Difficulty</u>	Signal difficulty in fulfilling game move
D32 <u>Request Help</u>	Elicit aid from X in attaining (game) goal
D33 <u>Give Help</u>	Supply information helpful to X's attainment of game goal
D34 <u>Remind</u>	Indicate something X should know but may have forgotten
D35 <u>Prompt</u>	Urge X to make his next move
D36 <u>State Intent</u>	Indicate in advance own next action
D37 <u>Refuse</u>	Withhold compliance with request
D38 <u>Announce</u>	Make statement initiating (or terminating) game
D39 <u>Accept</u>	Elicit offered help
D40 <u>Decline</u>	Signal non-acceptance of offered help
D41 <u>Reason Out Loud</u>	Aid (own) formulation of next question (signaling its postponement)
D42 <u>Blame Self</u>	Indicate own blameworthy action
D43 <u>Accuse</u>	Indicate X's blameworthy action
D44 <u>Request Confirmation</u>	Elicit corroboration of truth of proposition
D45 <u>Complete X's utterance</u>	Complete X's unfinished utterance (to signal comprehension and hasten discourse)
D46 <u>Thank</u>	Signal (conventional) gratitude for X's action
D47 <u>Prevent</u>	Stop X from performing illegal/useless action
D48 <u>Cancel Request</u>	Free X from commitment to compliance with request
D49 <u>Correct Misunderstanding</u>	Clarify intended meaning/force of (own) utterance misunderstood by X
D50 <u>Declare</u>	Make authorized, binding statement
D51 <u>Propose Action</u>	Elicit (acceptance of) proposed future action
D52 <u>Request Repeat</u>	Elicit repetition of X's utterance
D53 <u>Warn</u>	Indicate negative consequences of future course of action by X

D54 <u>Elicit Reason</u>	Elicit grounds behind action/utterance
D55 <u>Tease/Banter</u>	Make jocular allegation designed to irritate X
D56 <u>Soften Tease</u>	Reduce force of " "
D57 <u>Express Indignation</u>	Signal annoyance at 'unfair' action
D58 <u>Express Pleasure</u>	Signal pleasure(e.g. at finding solution)
D59 <u>Shift Blame</u>	Soften or negate self-blame by X
D60 <u>Qualify Admission</u>	Soften force of own admission/concession

Significant pauses and other paralinguistic acts signalling uncertainty, etc., have not been included above as they rarely appear to be intended in our data. Given this list of acts we can now analyse all the indirect and multiple-act utterances (as well as the more direct realizations of the act) that fulfill the function 'Signal disagreement with (or rule-breaking nature of) X's utterance', i.e. token outputs of demon number four, Object. The following include all such utterances found in the English data; relevant environments are in brackets:

Realizations of Object:

G.5: (What about the brothel? It's not 'the brothel'.)

It's not the brothel? You said it was a building.

G.5: (Not directly (to do with the brothel).)

Oh? That's crazy.

G.33: (I take that as a question.)

It isn't a question! You said it didn't have anything to do with food, so I know it's not a 'Smarties' packet.

G.41: (Yes, very solid.)

Very solid? Come one!

G.41: (What else stays in the same place?)

(Oh, lots of things.)

Not many things, most things are moving.

G.49: (Is the mineral -)

I didn't say mineral. Animal and vegetable.

G.49: (...almost liquid...)

It's not almost liquid. You said that.

G.49: (No...not much mineral in that...)

Why do you keep on harping on mineral? It's animal and vegetable.

G.49: (It must be in that case shortbread.)

(No.)

You've never baked anything else!

G.13:(Is it so small that...you could eat it in one mouthful?)

You've already asked that,didn't you?Didn't you say that?

G.27:(But the questions have to be phrased in such a way that I answer yes or no.)

Well,wasn't it in the first place?

G.40:(That's about seven,I think.)

No,it's about five.

G.40:(O.K.The Forth Rail Bridge.)

It's not made of metal,not all of it.

Yes it is,that's why they've got to keep painting it.

G.12:(Of use or decoration?)

(Neither.)

Why did someone make it if not to be useful or decoration?

G.8:(...and in the kitchen...)

I didn't say it was in the kitchen,I said it was used in the kitchen.

G.4:(...which neither supplies nor requires energy...)

I didn't say it didn't require energy...

G.4:(And you said it has no specific function,therefore something decorative.)

Yes I did.I said it had a function,very much so.

G.4:(Think of something in this area.)

In Edinburgh?I'm not a Scotsman.

G.13:(Primary is red,green or yellow.)

No it's not.

G.20:How can it be sort of me and still not maybe human?

(Ah,but I retracted that.)

G.11:(It has a very clearly defined position in relation to -you know.)

No!

G.15:(You've got one more question.)

No.That was the twentieth.

We can define the input(activation) condition for this demon as the occurrence of a (believed)untruthful or 'illegal' utterance(or one that is otherwise infelicitous but grammatically well-formed).But when we attempt to characterize the output conditions to cover all the above cases we find the following range of realization formulae,not all we would want to include in the realization rule for the demon's

output¹:

Echo + Int² + Remind p (content of previous statement by X)
Express Surprise + Comment (negative evaluation of X's utterance)
 (No/yes'+) STATE p(grounds for objection - e.g. contradictory nature of X's utterance)+ Int(+Justify Self)
Echo + Int(+Contr³) + 'Come on!'
Express Difficulty
Elicit Reason(for) p(action objected to)(+Justify Self)
Req. Confirmation p(X's previous stating of proposition contradicting last one)
 [Elicit Reason(Rhet.)(for) p (" " " ")
Reason Out Loud

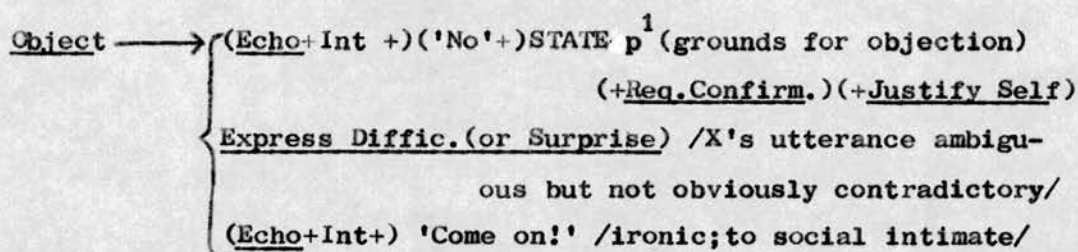
This list can be simplified somewhat by considering more closely the (locally conditioned) functions being performed by these alternative forms. To do so we must speculate for a moment as to just what the speaker is trying to achieve here in terms of his goal (the overall function of the act Object) and the immediately available means at his disposal for achieving that goal. Each of the more indirect formulae suggests (but only suggests) underlying cognitive activity, the by-products of which (propositions involved in that activity) seem to influence the choice of form simply because they are readily at hand. Thus several of the realizations concern possible grounds/reasons (if any) behind the speaker's production of the utterance objected to. This would suggest that the hearer (objecter) has been trying to determine the latter - as a concomitant process to calculating the meaning of the utterance - and that the by-products (propositional) of this thwarted search represent immediately available material wherewith the goal, now set up, of objecting to the utterance can be realized. Utterances like 'Why did someone make it if not to be useful or decorative?' or 'How can it be sort of me and still not maybe human?' (both tokens of Elicit Reason) might thus arise. The question remains, of course, as to what local conditions might lead to the situation where such by-products do arise as available means, since looking for

¹ This being reserved, as in previous chapters, for the most conventional/direct formulae

² 'Typical' intonation adhering to this act

³ Contrastive stress

a 'reason' behind the production of an utterance might well be a cognitive procedure applied to all infelicitous or unexpected utterances. Similarly with the more direct realization of Object, a statement about a proposition already accepted (or deducible) by both players that contradicts the utterance concerned: presumably the procedure involved in checking the truth value of that utterance will bring into 'working space' the contradictory earlier proposition, rendering it available as means for realizing the objection. But this procedure can be assumed to accompany the processing of any new incoming proposition. There would appear in fact to be a certain amount of unconditioned randomness at this level of choice, with whatever by-products of ongoing processes happen to be most 'foregrounded' at the moment of formulating the objection being integrated into that formulation - unless a purely conventional formula such as 'Come on!' (with more 'affect' than content) is chosen. We can, however, attempt an approximation of conditioning factors, at least for the more direct realizations - as was attempted for Game Question in Chapter 1. It is only these conventional formulae (themselves 'available means' for realizing the goal of the demon, of course) that need be marked on the realization rule for the demon's output:



The first formula can be taken as unmarked, being chosen most commonly under 'neutral' conditions. The second typifies the case of a discourse act being realized indirectly by another, as discussed in Chapter 3. The acts marked on the right of the rule are themselves expandable according to local conditions influencing the speaker's complex intention, but must contain at least a 'head' that realizes the basic function of the act concerned². More indirect ways of reali-

¹Can be elided to 'No, it isn't', etc., or simply 'No' if contradicting X

² The hierarchy implied by such relationships between acts is, as noted earlier, different from that of a rank system.

zing it need not be indicated, since, on the one hand, the speaker could produce them as realizations of Object through a 'blend' of immediately available cognitive material fulfilling its functional goal, and, on the other hand, the hearer can calculate their force from general principles and context (these cases and the processes they imply I have only considered in general terms, of course; they have not been integrated into the model in detail). It may be impossible to specify precisely which forms should or should not be incorporated into the rule defining the output of a given demon (this varying somewhat from idelect to idelect, no doubt), but the fact that we are dealing with a cline of conventionality/expectedness rather than with a clear-cut dichotomy does not undermine the explanatory and procedural advantages of incorporating such 'short-cuts' to the recognition and realization of acts into our model. These realization rules, moreover, capture linguistic generalizations about the conventional realizations of the acts in question - both direct and via some other act - which would have to be marked elsewhere on the model in any case.

The same reasoning applied to the somewhat more complex data for Request Rephrase produces the following analysis. The utterances listed include virtually all tokens of the act in the data for English; they do not include cases of prompting more specific new game questions.

Realizations of Request Rephrase:

G.1: (Is it part or whole of a human animal?)

We have to rephrase the question according to the game.

G.5: (This one is principally mineral - but little bits of everything else.)

What do you mean 'little bits of everything else'?

G.5: (The brothel?)

What about the brothel?

G.6: (Is it bigger than this shoe?)

Uh, which way? Length-ways or width-ways?

G.6: (Did we buy it?)

Would you like to rephrase that?

G.18: (Is it something flat or does it have depth?)

Well, which of those do you want to ask?

G.36: (I've given you quite a clue there.)

You have, have you? Thank you! I must try and interpret that!

G.36: (Do people have it?)

Oh... Do people have it?

G.36: (Is it in terms of history a fairly recent product?)

(No.)

No?

In terms of history depends on how far back you take history.

G.41: (Do you see it often?)

What do you mean by 'often'?

G.41: (Sculpture in the sense of art form, no.)

(So it's not an art form.)

(No.)

Sculpture can be in another sense, can it?

G.27: (Is its specific nature related to a human or to a place?)

Can you rephrase that question?

G.27: (The object is predominantly mineral.)

Well, you'll have to tell me what the other - the non-predominant - part is: mineral and -

G.32: (Is it something like an electricity pylon?)

What do you mean 'like an electricity pylon'?

G.39: Perhaps you could rephrase it - not 'Is it the Queen', the one before.¹

G.17: (Do we use it every day?)

You keep using 'we', which is difficult.

G.42: (This person could be involved with the media.)

Could be involved with the media?

(Often is involved with the media.)

G.22: (Was it the answer - the sheet with the answer on it for last time?)

I don't understand your question, sorry.

G.34: (Is it made of some sort of transformed animal product... or is it some sort of direct animal product like skin or horn or something of that sort?)

Which question are you asking?

G.34: (I suppose the answer is yes. But it might be a misleading answer.)

Would you like to develop that?

G.13: (It's you or me!)

Well, how do you phrase that?

¹ 'Is it a person of similar standing to the royal family?'

G.11:(Is it a class?)

What do you mean by a 'class'?

G.11:(Does it have a defined status?)

That's rather difficult to answer...no,you have to be more specific.

(Does it have a defined position?)

In relation to what?

G.40:(Is it pretty?)

Do you mean do I think it's pretty?

G.40:(Is it a specific named object? -with a name,as opposed to a thing like a tape-recorder?...)

Do you mean -

(Like 'David's hat',right?)

G.40:(Is it solid?)

If you defined solid a bit more -

G.20:(Now I gave you a big clue a while back.)

What was it?

G.21:(Is it identifiable as an organ?)

It all depends what you mean by 'organ'.

G.7:(Would the product come from a higher plant -such as trees and flowers,rather than lower ones?)

You must be more specific.

G.38:(Is it made from a raw mineral product - in other words,is the finished article made of something different from the raw mineral?)

Can't understand the question - not precise enough.

These utterances correspond to the following distinct formulae:

Remind (of game rules)

ASKWh 'what'+('you')+'mean' (+ 'by') sp(X's last utterance,or part of it)

ASKWh 'which'+NP(question,etc.)+'you'+('want to'+) VP(ask,etc.)

State Intent (to search for meaning of utterance,etc.)

Request Confirm.

ASKIF ('you'+ 'mean') sp(deduction from X's utterance)

STATE 'perhaps'/'if' + 'you'+ 'could' +VP(rephrase,etc.)

STATE 'you must/have to' +VP(be specific,etc.)(+Prompt)

(Give Reason +)Express Difficulty

Claim Inabil.to Comply (+Apologize)(+Give Reason)

ASKWh 'how'+'you'+VP(rephrase,etc.)

ASKWh 'what'+'be'+NP(unclear referring expression)

STATE NP(the answer,etc.)+'depend on' +NP(meaning of element of X's utterance)

'What about' +NP (element of X's utterance)

We can directly state the input condition for this demon(whose function is to 'elicit elaboration of X's utterance') - namely 'an ambiguous but rephrasable utterance produced by X', with specific criteria for 'ambiguous'(or otherwise unsatisfactory) determined by the rules of the game and by general conversational principles. But we must simplify the output formulae above in such a way that the realization rule they embody contains only those conventional forms directly relatable to this act, thus:

Request Rephrase → { ASKIF 'you'+'can/could/would' ('like to')
+VP(rephrase,etc.)
ASKWh 'how'+'you'+VP(rephrase,etc.)¹
ASKIF('you mean'+)p₁ /likely meaning deduced/
ASKWh 'what/which(way)'('you mean by'+NP
(element of X's utterance))/single word
ambiguity/
Req. Confirm.² p₂ /X's utterance surprising/
'What about' + NP /X's utterance not specific
enough/

'P₁' is a hypothetical rephrase of X's utterance and 'p₂' is either the proposition of X's utterance or an inference from it. The first line represents the unmarked formula for the general act Request Action, as discussed in Chapter 3 (but with specific propositional content and response set). As in the case of Object we can take it that the more indirect realizations of the act - and optional expansions of the direct ones - are the result of (by-products of) ongoing cognitive activity; for example, the discovery that a rule has been broken might influence the selection of a form like 'We have to rephrase the question

¹ This form can be taken as an ideosyncratic variant of the first (or a blend with it).

² Overlapping with (or a blend with) Express Surprise (i.e. Echo +Int)

according to the game' to realize the act¹.

We can see now how organic 'blends' realizing two or more acts are possible in the same utterance - something that would be difficult to account for if one insisted on marking all possible realizations on the output conditions of each demon. If the input conditions for two distinct demons are simultaneously met in the ongoing discourse - say those for Object and Request Rephrase - we can expect the conventional realization formulae of both acts to be added to the pool of immediately available means for realizing the speaker's complex intention (the overlapping or compatible functions of the two acts). Propositional content relevant to the one might in that case combine with a form typically realizing the other, as in 'What do you mean by 'little bits of everything else?', where the form realizes Request Rephrase but incorporates directly the part of X's utterance being objected to. Alternatively, the speaker's complex intention might be fulfilled indirectly through incorporating some cognitive by-product which is not related to one act more than to the other, as in the case of 'You keep using 'we', which is difficult'. Often it is simply the intonation of one act that blends with the form and content of another - e.g. the querulous intonation of Object accompanying 'Well, which of those do you want to ask?'.

Our two demons can now be formalized as follows, with input conditions at the top left, slightly abbreviated output realizations top right, possible preceding response sequence acts bottom left and possible following response sequence acts² bottom right:

D4 <u>Object</u> (Function: signal disagreement/dissatisfaction with X's utterance)	
Infelicitous/contradictory utterance by X	(Echo+) (No'+) STATE p(grounds for object.)
	<u>Expr. Surprise/Diffic.</u> /ambig. but not contradictory utt./
(Echo+) 'come one!'/ironic/	
(<u>Object</u> ³ ⇒)	⇒ <u>Justify Self/Object</u>
	⇒ <u>Rephrase/Admit</u>

¹ The utterance is also a (blended) token of Object.

² There does not appear to be any clear relationship between a particular form of, e.g., Object and the form of the act responding to it, this depending more on the nature of the rule/maxim infringed by X.

³ i.e. an objection counter-objected to in an argument

D15 Request Rephrase (Function: elicit elaboration)

Ambiguous but rephrasable utterance by X

ASKIF 'you'+ 'can/could/would'+p(rephrase)
ASKIF('you mean')p/likely meaning deduced/
ASKWh 'what'+ 'mean'+NP/single word ambig./
Request Confirm./X's utt.surprising/
'What about' +NP/X's utt.not specific enough/

====> Rephrase
====> Claim Inab. to Comply
====> Refuse

Felicity conditions pertaining to these acts will be seen to be implicit in their input conditions and functions; thus for Object the sincerity condition to the effect that the speaker must believe X's utterance to be objectionable and the preparatory condition to the effect that X must be able to recognize that he has broken a rule or maxim and act accordingly are deducible from the input condition and function as marked for that demon. Similarly with the sincerity condition for Request Rephrase to the effect that the speaker must want/need a rephrase and the preparatory condition that the utterance is expandable as requested.

Similar formalizations based on the realization rules given in Chapters 1 and 2 respectively can be given for Game Question and Answer:

D2 Game Question (Function: elicit information towards solving game)

Questioner's game turn

ASKIF -p(+modal) (+neg)
STATE -p(+modal) (+neg) (+tag)/less tentative?/
'What about'+NP /list /

Answer¹ ==>

====> Answer(+Expand/Rephrase)
====> Claim Inab.to Comply
====> Req.Rephrase/ Object

¹ Or 'Announce' ==> 'for first game exchange; any 'excursion' sequence can be inserted between one of these acts and Game Question.

D1 Answer(Function:supply information requested)

Answerer's game turn (or info.requested)	REPLY _± (+STATE p) (+tent.) STATE p(+ 'right/correct') ¹ Hedge /simple 'yes/no' impossible/
<u>Game Quest.</u> ⇒	
<u>Req. Info.</u> ⇒	

Turning now to the wider processing implications of the model, the rest of the chapter will be devoted to diagramatic representations of the interaction between two players(α and β) in terms of demons and frames for a variety of game incidents. Frames are represented as horizontal square braces, F1 being the Game Frame, F2 the Meta-frame, and F3 the Discussion Frame. The small curved horizontal braces contain demons that fill expectation slots in a frame (or are pointed to from them); other demons activated by local conditions but not relating to a slot are without such a brace. The broken arrows represent afferent (comprehension) processes, whereby the form and content of an utterance is matched to a demon's output conditions; the double-headed broken arrows indicate slot-matching processes which do not result in further efferent activity from the demon matched. Unbroken arrows represent efferent (production) processes, whereby an activated demon generates its own realization, either directly or through some other demon addressed on its output conditions. The demons contained in small broken horizontal braces are held over from the previous exchange and represent the speaker's own previous utterance²; these are linked to the demon corresponding to the speaker's current utterance by small arrows above the demons concerned, indicating the temporal ordering. When it is necessary to disambiguate between separate activations of the same demon within one frame representation, the speaker of the utterance concerned will be indicated in round brackets after the demon. When realization of a demon involves more than one act, the temporal sequence is marked next to the efferent arrows. When two acts are performed simultaneously (other than in the case where one realizes

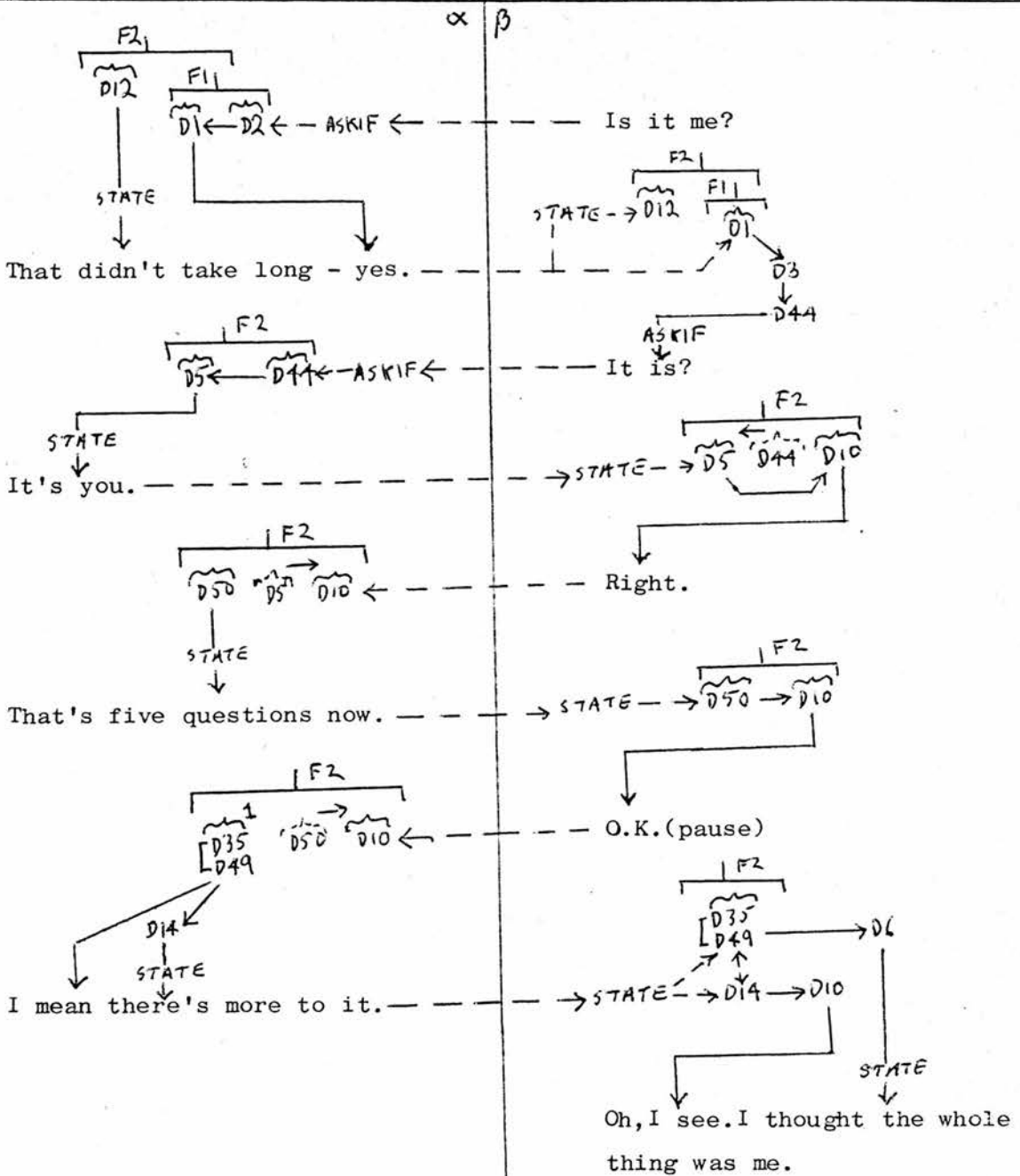
¹ A stylistic/ideolectic variant of the first line, perhaps

² They may in turn be reactivated (not having as yet been 'satisfied'), in which case further efferent arrows lead from them.

the other sequentially) the two demons are joined by a small vertical brace; sometimes the acts will be separated by necessity of the diagramming, but can be seen to lead to the same output.

Only those demons and frames taken to be active in the production/comprehension of the particular utterance concerned are indicated on the diagrams. Other potentially expected demons within a frame can be regarded as 'lurking', readily accessible for activation when their input conditions are met. Sometimes a demon in the Meta-frame will be activated by conditions independent of efferent activity by the demon(s) active in the analysis of the interlocutor's current utterance, to which it will therefore not be connected by an arrow. The precise nature of the cognitive activity behind the overt acts performed by our demons is not represented - considerable over-simplification is of course involved, particularly where such matters as the personal relationship between the players are relevant. Other elements which have been omitted for clarity include indication of the motives and goals adhering to the role-tied slots in the frames and, in the case of the Discussion Frame, indication of the current topic of discussion. The excerpts modelled below cover a wide range of 'extra-ludic' excursion types which illustrate how the model is in theory extendable well beyond simple question-answer exchanges (and what is currently simulatable on the computer). One exchange will be followed through in detail before the others are presented. Note that α and β are the corresponding speakers in the transcripts of the games and can refer to either the questioner or the answerer accordingly.

Game 16



D1: Answer

D12: Comment

D49: Correct Misunderstanding

D3: Express Surprise

D35: Prompt ,

D10: Acknowledge

D2: Game Question

D44: Req. Confirmation

D5: Confirm

D50: Declare

D14: Indicate

D6: Justify Self

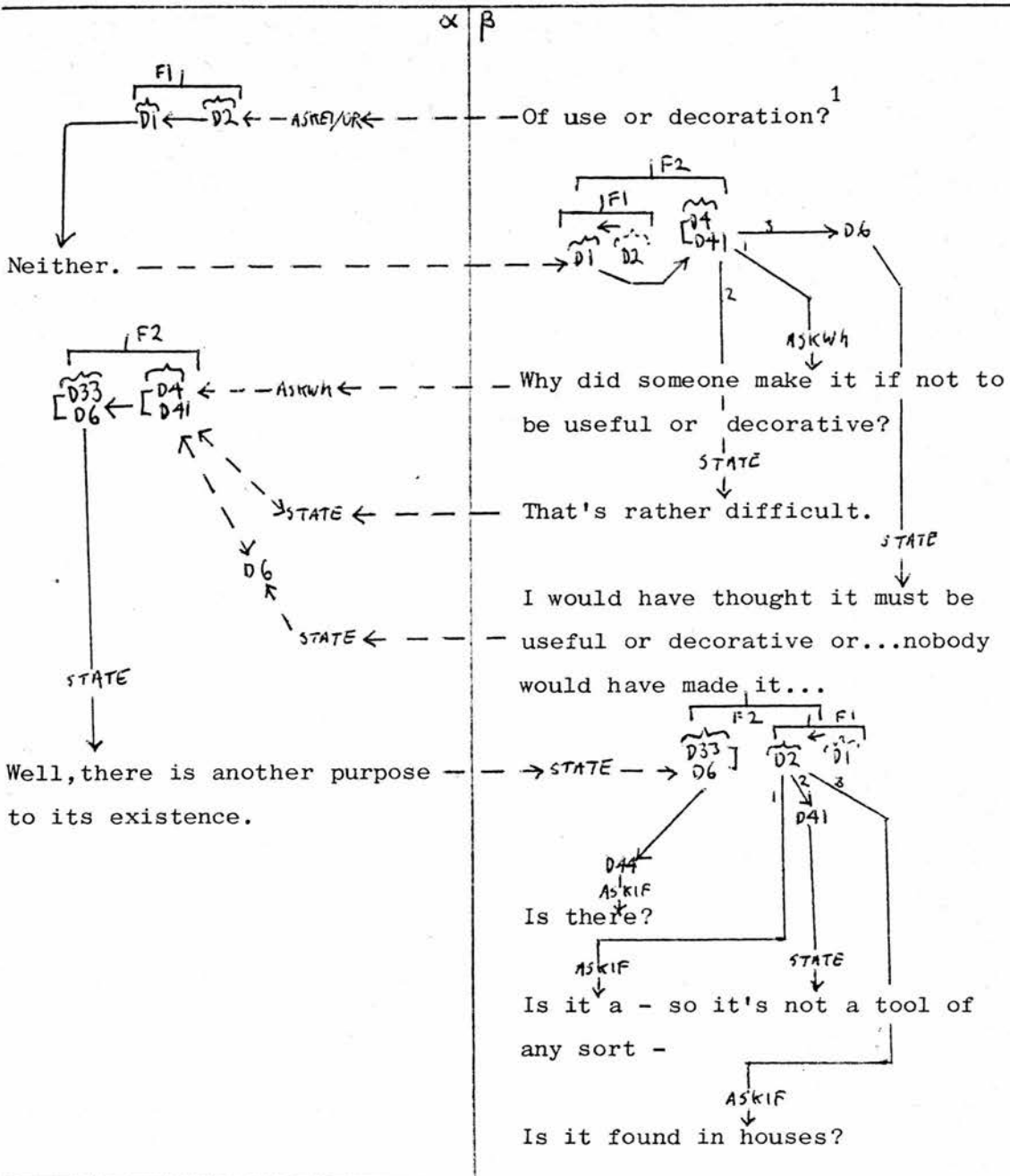
¹ Meta-frame monitoring here involves finding the reason for β 's protracted pause. The game object is the questioner's (β 's) nose.

At the beginning of this incident α is expecting β to produce a new game question(his next move) when he receives the utterance 'Is it me?', and recognizes that its form(ASKIF+Int) and propositional content does indeed fit Game Question in the corresponding slot of the Game Frame. The demon for this act, D2, will in turn activate D1, the Answer demon, within the same frame via the response sequence marked on the former's output. Having searched for and ascertained the answer to the question, D1 will activate both D12(the Comment demon potentially expected by the Meta-frame F2 and forming a possible pre-head to D1's realization) and the head of its realization 'Yes'. β recognizes this as a possible realization of D1 within the Game Frame, but is surprised by the answer, causing D3(Express Surprise) to be activated in the efferent mode. The latter is realized by a Request Confirmation(D44): 'It is?', which utterance marks the initiation of an excursion temporarily suspending the F1 game exchange pattern. α recognizes that the utterance is a token of D44(realizing D3) due to its form(elided ASKIF + Int) and content (it refers anaphorically to the proposition β has previously just asked about) and not a Game Question as expected at that point. The response sequence on the output of D44 activates D5 in efferent mode(Confirm), which is realized by the utterance 'It's you'. β accepts this as the expected token of D5 satisfying his own prior Req. Confirmation(D44), and the optional third response sequence act for D44, namely D10(Acknowledge) is consequently activated (and recognized as such by α).

At this point, β , taking 'me' to be the game object, believes the game to be terminated (unlike α , who knows better). Meanwhile, D50(Dec-lare - i.e. game count) is independently activated in α 's Meta-frame; its input conditions are difficult to formulate exactly but can be taken to involve a subjective assessment by α (the answerer here) to the effect that the questioner might need a reminder of the count at that point, before he formulates his next game question. β recognizes the force behind the resultant utterance ('That's five questions now') due to the match between its propositional content (and form) and the corresponding demon (D50) within the Meta-frame. A response sequence from the latter demon to D10(Acknowledge) produces the utterance 'O.K!'. Though the 'now' of the preceding utterance may confuse him slightly, β still presumes the game to be terminated and does not formulate a new question. The subsequent pause (and possibly other paralinguistic

features of the situation) causes α to realize the misapprehension β has fallen into: Meta-frame monitoring of the probable motives behind β 's behaviour will establish that the latter appears to regard the game as over, and a search back over recent exchanges will establish that there is indeed a likely reason, namely that he has taken the game object to be himself. Discovery that a misapprehension has occurred will activate D49(Correct Misunderstanding). At the same time D35(Prompt) will be activated since its input condition is that the questioner, whose game move it is, does not look like performing that move without excitement. α 's consequent utterance is therefore a 'blended' output of these two demons. Now 'I mean'+p(disambiguation of own misunderstood utterance) is an output formula for Correct Misunderstanding, and Indicate p(grounds for future action on X's part) is an indirect realization of Prompt, Indicate in turn being realizable as STATE 'there be'+NP. β 's unraveling of the complex force behind the utterance here will, presumably, be on the one hand via the propositional content indicating grounds for his continuation of the game (from which he will recognize that a Prompt - an expected Meta-frame slot-filler - has been performed), and on the other hand via the form 'I mean'+p to the recognition that a Correct Misunderstanding is also being performed. A possible referent 'misunderstood utterance' for the latter act can easily be found by looking back at recent exchanges; thence the reason why both the demons behind α 's utterance should have been activated simultaneously can be deduced. The efferent output of D35(Prompt) will be the activation of D2 for the production of β 's next game question (via the response sequence from D35), but, before that, the response sequence to D49(Correct Misunderstanding) will enter as it is more 'local' than the game exchange and must be taken care of before F1 is returned to. The resultant output of applying that sequence will be an Acknowledge followed by a Justify Self giving the reason why β fell into the misapprehension.

Game 12



D33:Give Help

D41:Reason Out Loud

D3:Express Surprise

D4:Object

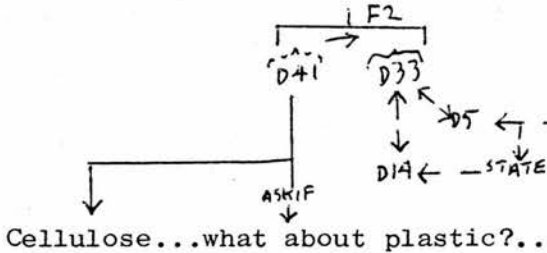
D6:Justify Self

D44:Req.Confirmation(Rhet.)

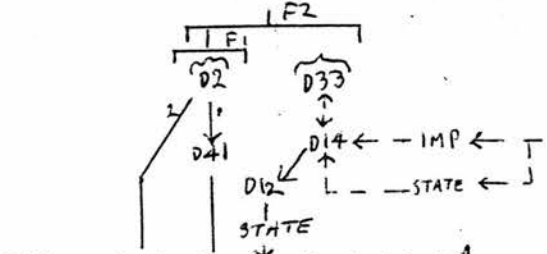
¹Meta-frame rule broken but overlooked by both players

Game 15

Yeah, it would be like card-board and paper...and cellulose..



Cellulose...what about plastic?..

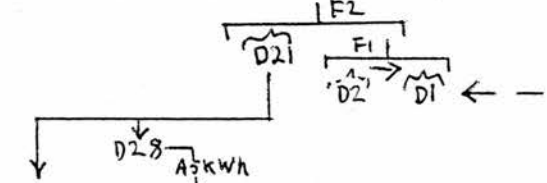


It's got to be in that list!¹

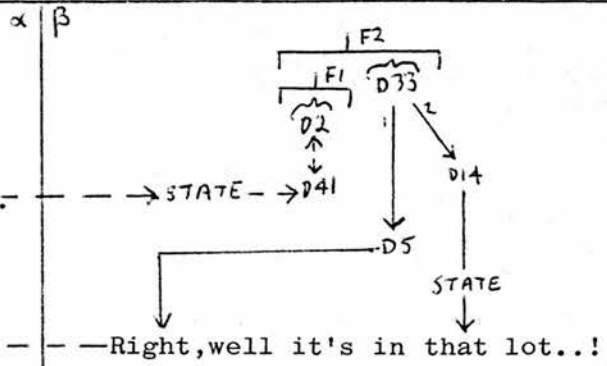
Cellulose, and it covers things...



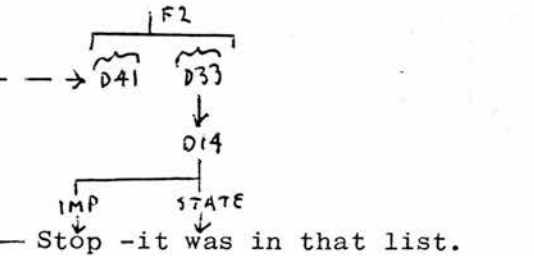
It's a package of something.



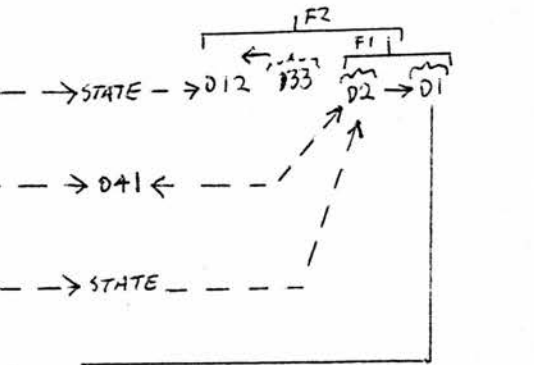
O.K. What is it?



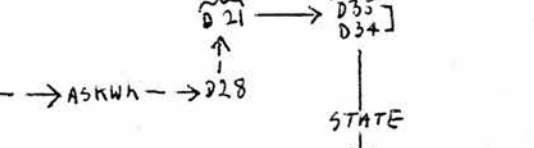
Right, well it's in that lot..!



Stop -it was in that list.



Right.



You've got one more question.

D41: Reason Out Loud

D33: Give Help

D12: Comment

D34: Remind

D28: Req. Information

D5: Confirm

D14: Indicate

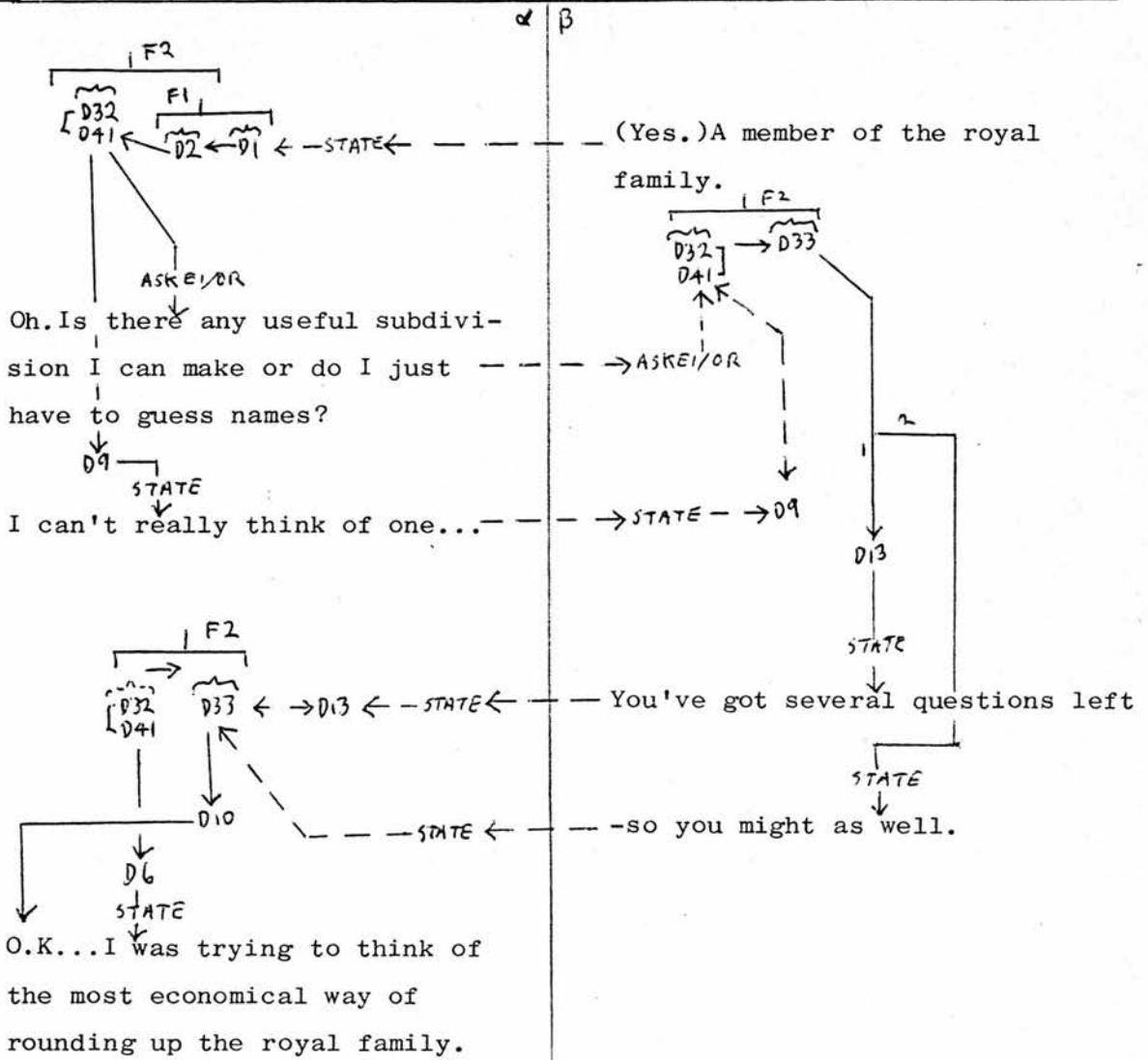
D35: Prompt

D21: Concede

¹ Further cognitive factors involved here presumably include the expression of annoyance at an 'obvious' clue.

² Meta-frame monitoring here disallows the concession and reminds of the rule that justifies this.

Game 12



D32: Request Help

D10: Acknowledge

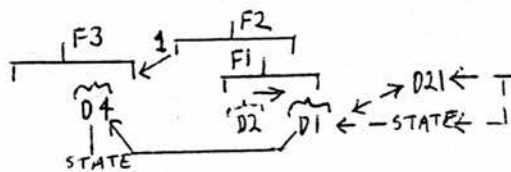
D41: Reason Out Loud

D6: Justify Self

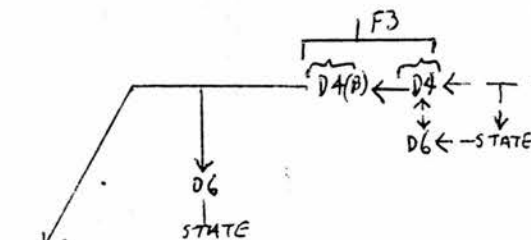
D33: Give Help

D13: Give Reason

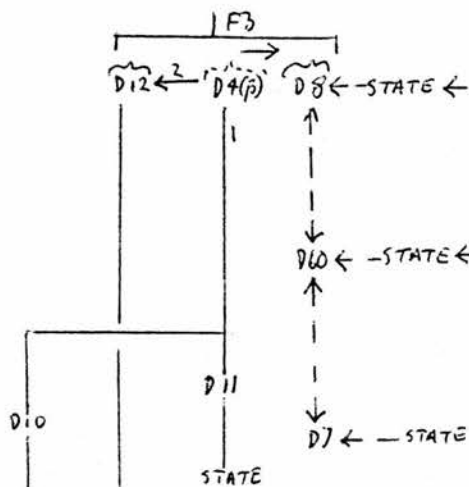
D9: Claim Inab. to Comply (here: to answer own question)



It's not made of metal, not all of it.



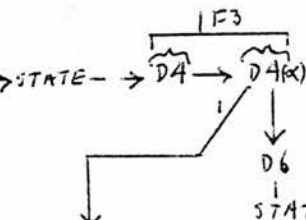
No, it's made of stone as well. surely, and tarmac and stuff.



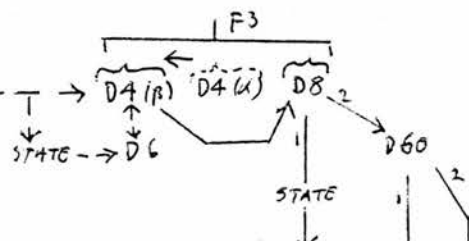
Hm. I think it's made of metal and stone.

Very misleading that was.

O.K. The Forth Rail Bridge.



Yes it is, that's why they've got to keep painting it.



I suppose the very bottom of it will be stone -

But I mean the vast majority of it is metal, 'cause they keep painting it.

You know - those men with full-time jobs going from one end to...

D21: Concede

D4: Object

D6: Justify Self

D60: Qualify Admission

D11: Restate (here: own position)

F3: Discussion Frame

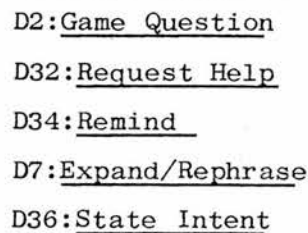
D7: Expand/Rephrase

D8: Admit

D10: Acknowledge

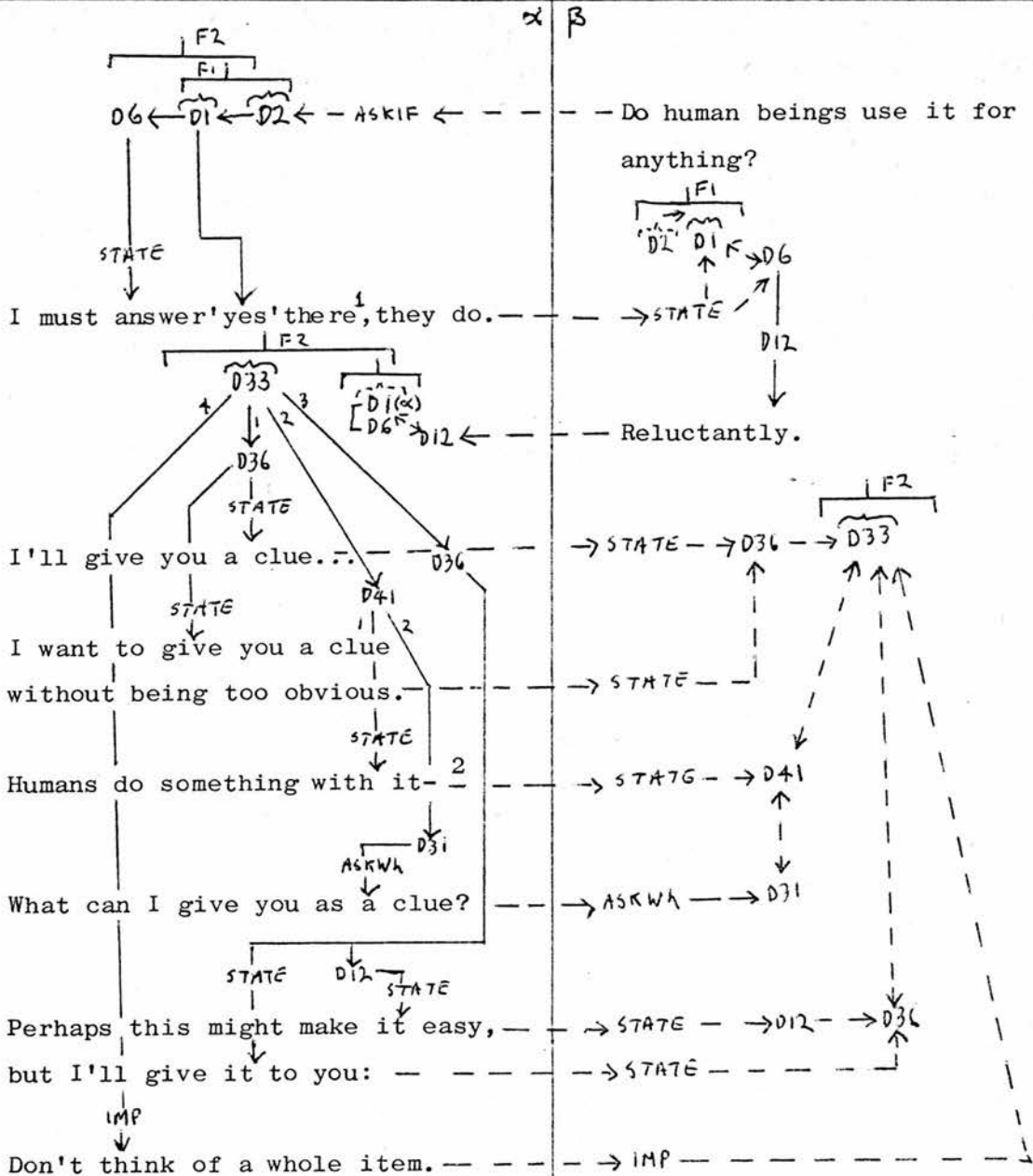
D12: Comment

¹ Monitoring activity simultaneously finds a contradiction here and switches from F1 (its terminating conditions being met) to F3.



1 'It's not you as a whole';the object is her nose.
2 F1,suspended since the beginning of the exchange,is reactivated
when no more useful help is forthcoming.

Game 35



D1: Answer

D6: Justify Self

D33: Give Help

D41: Reason Out Loud

D2: Game Question

D12: Comment

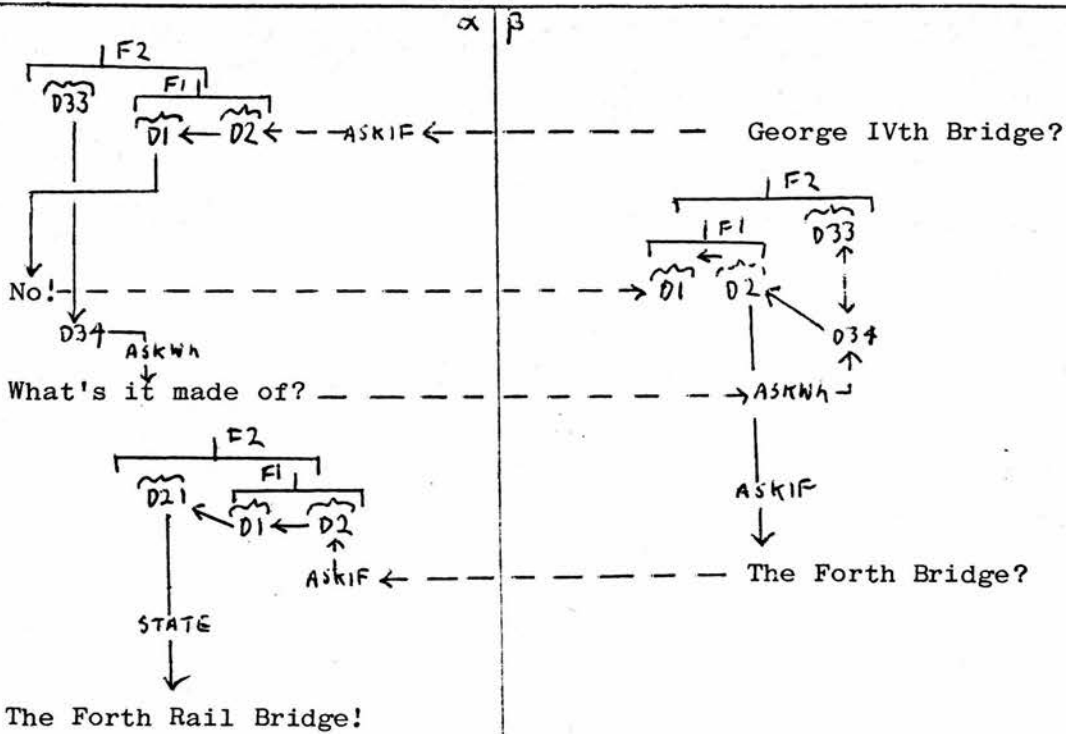
D36: State Intent

D31: Express Difficulty

¹ Activated by recognition that the Meta-frame constraint for yes/no replies renders the answer misleading

² A previous proposition confirmed by α; the object is the questioner's nose.

Game 41

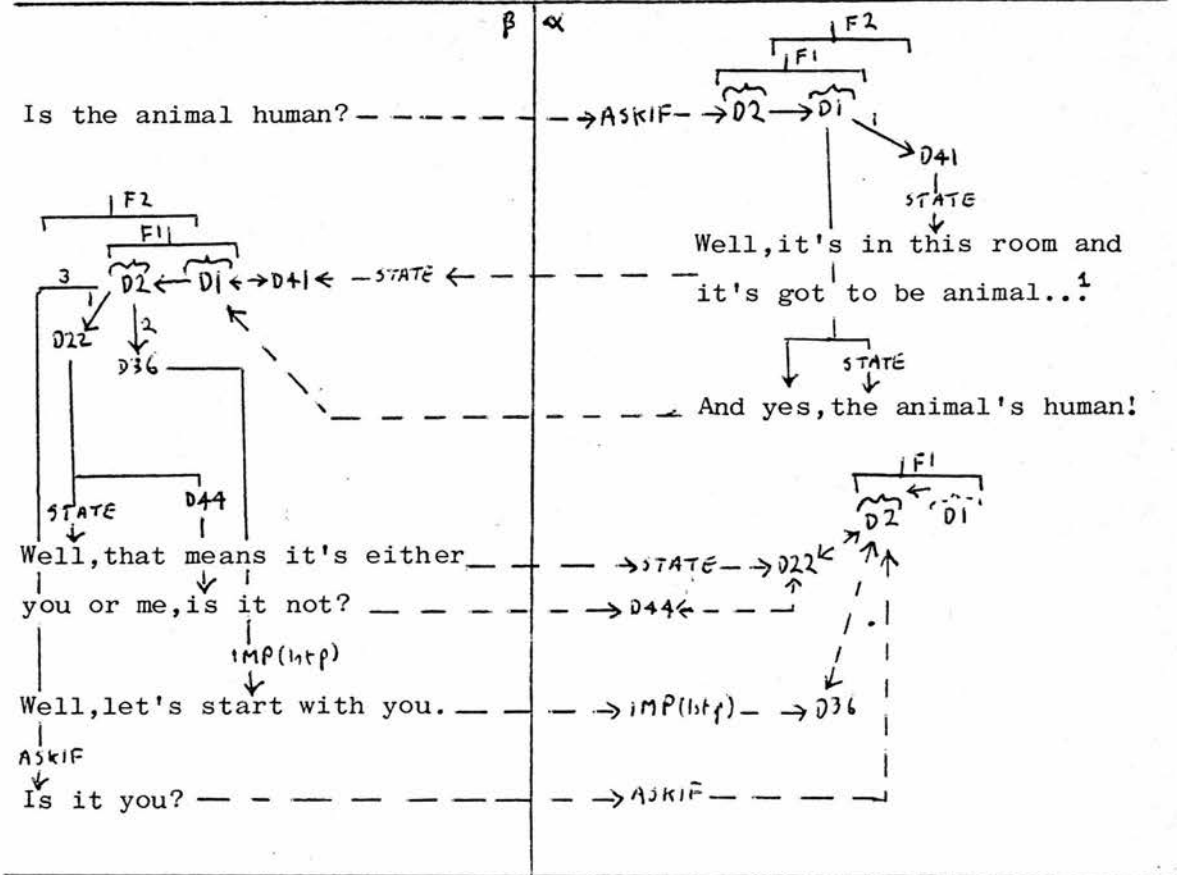


D33: Give Help

D34: Remind

D21: Concede

Game 16



D41: Reason Out Loud

D22: Make Inference

D36: State Intent

D44: Req. Confirmation

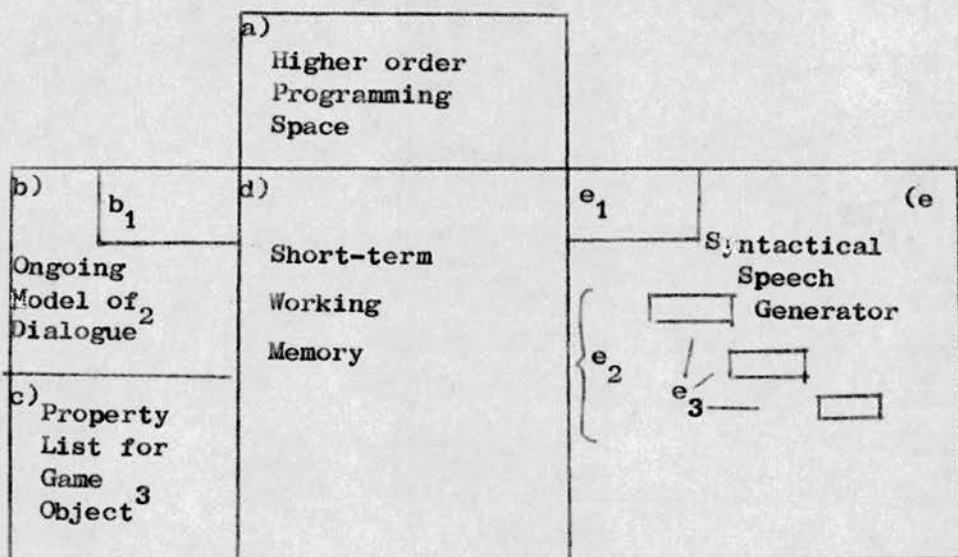
¹ This may be an attempt (cut off in the middle) to point out that the game question is redundant (the object here is the questioner's nose).

It should be evident from the above how frame-expectations can simplify our account of the likely procedures behind the production of our data and how they can provide, together with appropriate discourse act demons, the control structure necessary for actually generating the discourse we are accounting for. In Part Two of the thesis I shall extend the model to represent interaction with a sentence grammar and discourse-level rules for the relevant languages, and routines modelling the strategy behind the players' choice of successive game questions and their corresponding answers .

-Part Two-

Chapter 6

In the diagrams that form the bulk of this chapter the generation of one game in each of the four languages used in the corpus is modelled utterance by utterance, integrating fragments of corresponding sentence grammars with the discourse component elaborated in Part One. A wide range of language types was chosen for the elicited data to illustrate the universality of the model, namely English, Russian, Japanese and West Greenlandic Eskimo. The hypothetical strategy routines utilized by demons D1 and D2¹, the response sequence rules and the metalanguage symbols used on the diagrams appear at the end of the chapter, along with the syntactic rules for the four languages. The basic components of the model can be seen on the skeletal diagram below (representing speaker-hearer α or β); they are largely self-explanatory and no attempt has been made to justify psychologically the particular divisions made - the diagram simply indicates the minimal organization of the system into components capable of logically generating the games of the data.



b_1 contains the syntactical form class of the last utterance by the interlocutor, and e_1 that of the current utterance being generated; e_2

¹ On page 166 ;see Chapter 7 for a discussion of this component

² Showing the last utterance analysed

³ Or Long Term Memory representation of the object (for the answerer)

is a semantic buffer for unordered input into the generator; and e_3 is the 'phonemic' output to the articulatory system. Though there is assumed to be a certain amount of parallel or 'multi-'processing involved, the general procedural flow is from component (b), where the last incoming utterance is analysed as to form (marked in b_1) and content. The output from this analysis is passed on the one hand to the frame and demon system of component (a) - where it is 'fitted' to a Meta-frame slot or activates some other demon in the afferent mode - and on the other hand to the accreting property list of the unknown object in (c)¹ for matching, generating possible new propositions according to the strategy routine serving D2(Game Question), etc. Interaction between this incoming proposition and the content of (c) - as monitored by the strategy component - results in the introduction into working space (d) of a propositional 'bundle', which is in turn passed on to the semantic buffer (e_2) according to the output of the demon currently active in the efferent mode in component (a). The latter simultaneously sets up a syntactic template plus intonation contour in the generator (e) according to its realization rule. The application of specific syntactic and discourse-level rules² (marked $S_{1...}$ and $A_{1...}$ respectively) whose activation conditions are met in the ongoing generation process will here produce phonemic output strings according to the content of the semantic buffer. The semantically determined phrase-unit production (along the horizontal arrows within (e) on the diagrams that follow) is assumed to take place in parallel to the elaboration of the clause-level syntactic template already set up. There is indeed some psycholinguistic evidence from hesitation and tongue-slip phenomena that such two-level processing does occur (cf. Boomer, 1965) and is relatable to prosodic tone-units.

The speech generator (e) can be regarded as a variety of Augmented Transition Network (cf. Thorne, Bratley and Dewar, 1968) in which there are separate routes through the network (according to conditions stated on the rules of which it consists) for clause-level interrogative (ASKIF) and declarative (STATE) forms and for phrase-level units such as NP, LocP,

¹ Or in the case of the answerer, to his Long Term Memory representation of the game object

² These latter rules are indicated in component (a) since they can be regarded as a sub-type of demon, whose output adds to or deletes items from the ongoing syntactic generation in (e).

etc. Syntactic generation is thus basically 'left-to-right' (allowing for suspension of the elaboration of clause-level rules while phrase-level accretion is completed, as required) and there is no order-changing amongst syntactic constituents, the order being set up at the outset by the output of the demon concerned - plus any 'thematizing' discourse rule activated in (a). The syntactic rules are semantic-input-sensitive phrase structure rules - i.e. some of the major rules (such as S3 and S4 for English) require a single reference to the content of the semantic buffer to be expanded conformally. Some of them are 'augmented' to include more than one syntactic category on the left (as the two rules mentioned and all rules of concord) - in which case they can be said to correspond to non-order-changing transformations. Clearly they could be simplified as a rule system by the introduction of order-changing transformations relating interrogative to underlying declaratives, etc., but since we are describing a real-time production model this simplification (maximal generalization) of the rules must be weighed against the increase in computational complexity of derivation it would result in. There has, moreover, never been any psychological evidence for the 'reality' of such transformations (cf. Fodor, Bever and Garret, 1975) for attempts that have been made to elicit this), so, being counter-intuitive as regards actual speech production, they are best regarded as abstract descriptive generalizations rather than as rules active in utterance production as such¹. The simplification of the interface between the demons in (a) and the speech generator (e) provided by the setting up of a fixed but expandable template at the outset of generation is too valuable, in procedural terms, to be thrown away merely to collapse the rules for declarative and interrogative utterances in English: computational space and time is presumably at a premium, whereas human memory is unlikely to be overburdened by a few additional rules - especially since these are activated (on the model) by specific input conditions being met and do not have to be 'sifted through' at every stage as on a transformational model. There is probably a good deal of (beneficial) redundancy in the rule-correlates actually brought to bear on the generation of well-formed utterances by humans, and the linguistic metalanguage used on the model to describe them may be misleading in suggesting the actual representation of such abstract

¹ And suitably augmented phrase structure grammars do not preclude recursiveness, discontinuity, etc. (Chomsky's argument against them)

symbols as 'VP' or 'Comp' there. In as far as the rules incorporating the latter are semantic-input-sensitive anyway, these generalized syntactic categories can be replaced by 'V' and 'Adj', etc. (i.e. syntactic features of entries in the lexicon) to form more specific rules equivalent to the maximally general ones. In the fragmentary grammars for the games analysed (at the end of the chapter) it is always the descriptively simplest set of rules accounting for them - barring order-changing transformations - that is given, and this should be envisaged as only part of a much more redundant (and construction/lexeme-specific) rule-system or network. It is explicitly not presumed that all rule-like regularities observed by linguists are necessarily internalized in some way and used by the speaker/hearer in producing speech. On the analogy of mathematical formulae describing kinetic limb motions - these not being directly relatable to the muscular commands behind those motions - the regularities forming a linguistic 'competence grammar' are regarded as descriptive 'epiphenomena', only abstractly and indirectly related to the internal processes involved in speech production.

Lexical entries (indicating only those features actively involved in the productions modelled) for the lexemes corresponding to the predicates, arguments and modifiers concerned are marked below each diagram. Predicates are marked with those elements of their 'case frames' relevant to the production in question; these correlate semantic features of their arguments (as 'beneficiary' and 'object', etc.) to ordered syntactic slots about the lexical verb (or other predicate). Constraints marked here - e.g. the necessity of a following complementizer or object - are integrated into the generation between (e_2) and (e_3) and have the power to affect the further elaboration of the (clause level) syntactic template.

The propositional elements in (c), (d) and (e_2) are assumed to be loosely associated (unordered) bundles of pointers towards 'mental objects'¹ - tokens of the latter in any sensory modality or their phonemic 'word-addresses', or a mixture of both - rather than linearly concatenated propositional strings in some neutral 'Mentalese' (cf. Fodor, 1976): the metalanguage employed should not be confused with the cognitive processes/representations whose effect it purports

¹ i.e. multi-modal, word-addressable Long Term Memory semantic structures

to describe(see Chapter 8).

As an example of how the diagrams are to be interpreted in practice, let us follow through the processes implied by the first diagram that follows(β 's utterance 'Is it a manufactured object?'), bearing in mind that much simplification is involved. We start with box(b) on the left, where α 's preceding utterance 'It's mineral' is registered and analysed (the dotted line pointing upwards into box(a)) as a token of D38-Announce - which is the act expected within the Game Frame F1 at that moment. Its propositional content(involved in the recognition of the utterance as a token of D38) is added to the property list of the unknown object X1 in box (c), as indicated by the broken line pointing downwards. The afferent activation of D38 back in (a) now activates D2(Game Question) in efferent mode(the short arrow connecting the two demons) according to the sequence rule on its output for the Game Frame context. The output of D2 is -according to its realization rule -ASKIF p, where 'p' is the proposition produced by the application of the strategy routine(page 166) utilized by the guesser in realizing his next game question. The generation of this proposition involves the interaction of this routine with the current property list in (c) and with Long Term Memory structures/associations corresponding to it(here= mineral objects); this complex process is simply represented on the diagram by the double arrow leading from (c) to the metalanguage representation of the proposition in working space (d). The result of D2's output -as indicated by the connected arrows leading from the demon - is on the one hand the setting up of a syntactic template in (e) corresponding to the command ASKIF, and on the other the shunting of the proposition into the semantic buffer (e_2). The production of the surface utterance 'Is it a manufactured object?' involves the application of those syntactic rules whose activation conditions are met during the generation process - notably S4a, which fills the 'Comp' slot in the template with a NP since the proposition in the buffer is one of class membership, and puts the corresponding auxiliary 'be'¹ in the first slot(indicated by vertical arrows). In parallel with this clause-level syntactic elaboration, lexicalization processes involving lexical look-up of X2 are taking place(the horizontal arrows) between the semantic buffer and the phrase-level output strings² in (e_3). A syn-

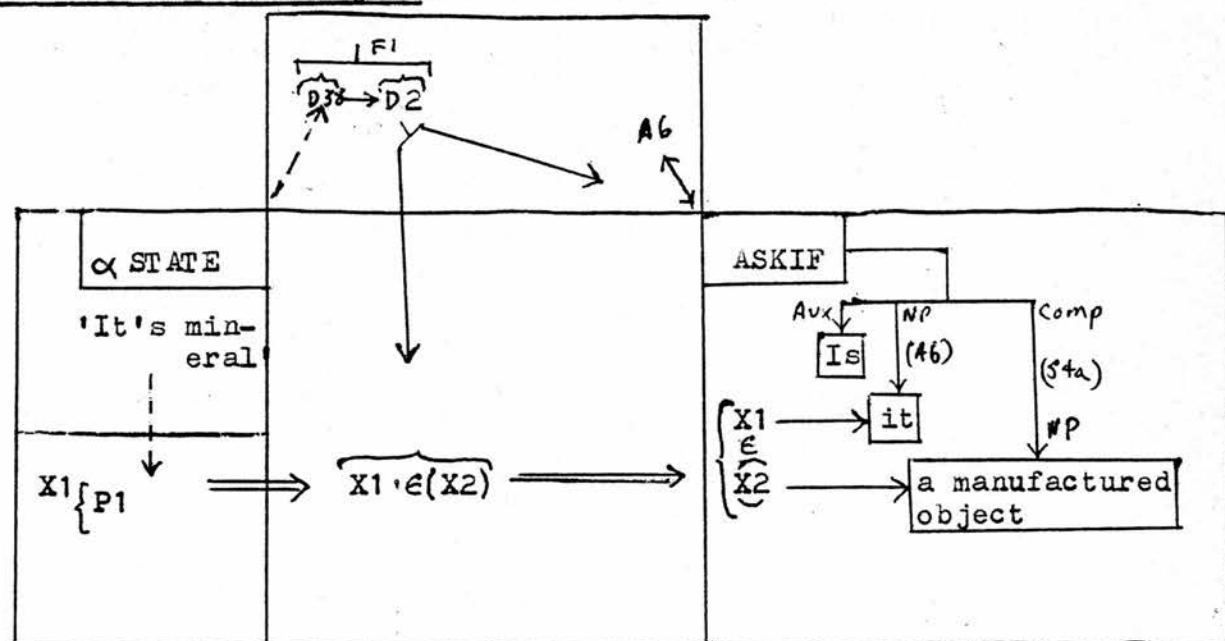
¹Converted to 'is' by the application of concord rule S5c

²Represented by orthographic word forms

tactic rule concerned with the order of constituents within such a phrase-level group - S2 - is summoned in the process. During the generation the discourse-level rule A6 for anaphoric pronominal reference has its activation conditions met, as indicated by the double-headed arrow in box (a), and the NP slot corresponding to X1 is filled by 'it'. The phonemic output (e_3) can now activate the articulatory system - in conjunction with the interrogative intonation contour associated with the output of D2.

(α : It's mineral.)

β : Is it a manufactured object?



P1: mineral [Adj]

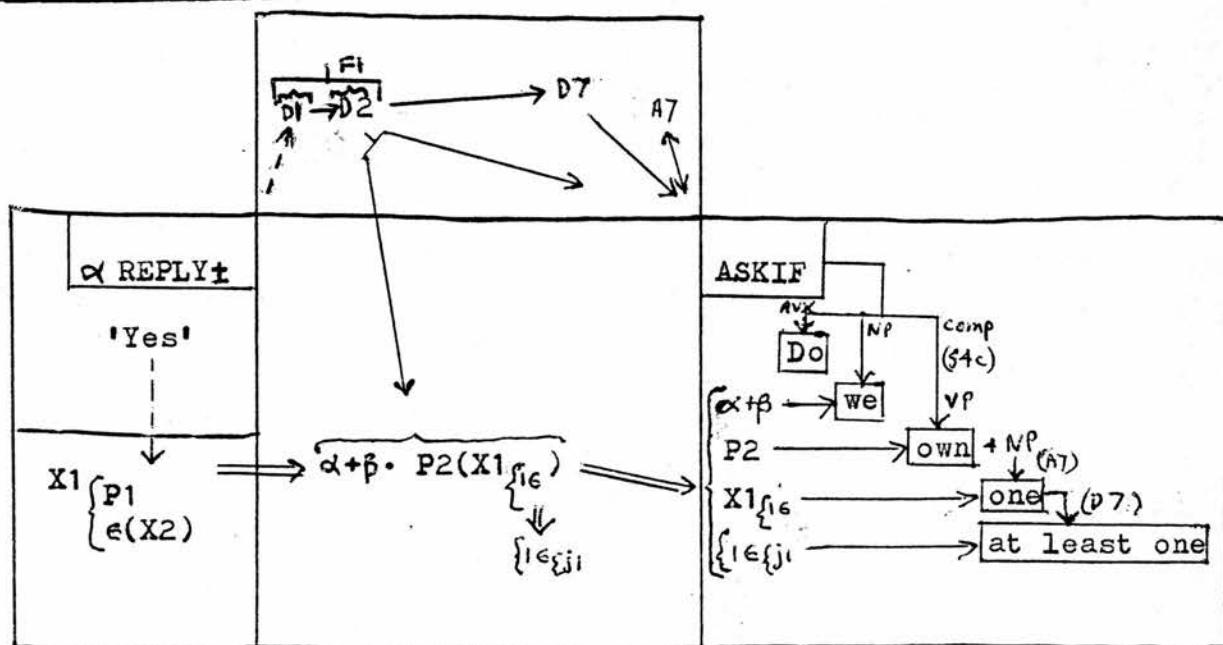
X2: manufactured object [Adj] + [N]

D38: Announce

D2: Game Question

(α : Yes.)

β : Do we own one - at least one?



P2: own [V] (+ [NP])

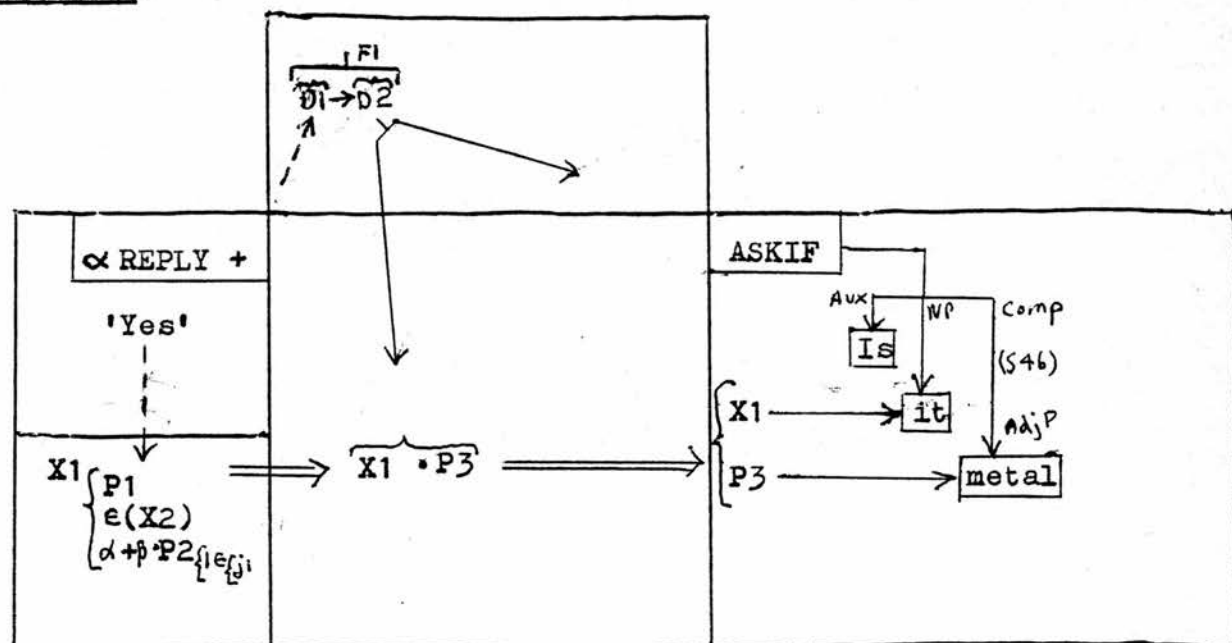
D1: Answer

j1: at least [Adj Hg]

D7: Rephrase

(α :Yes.)

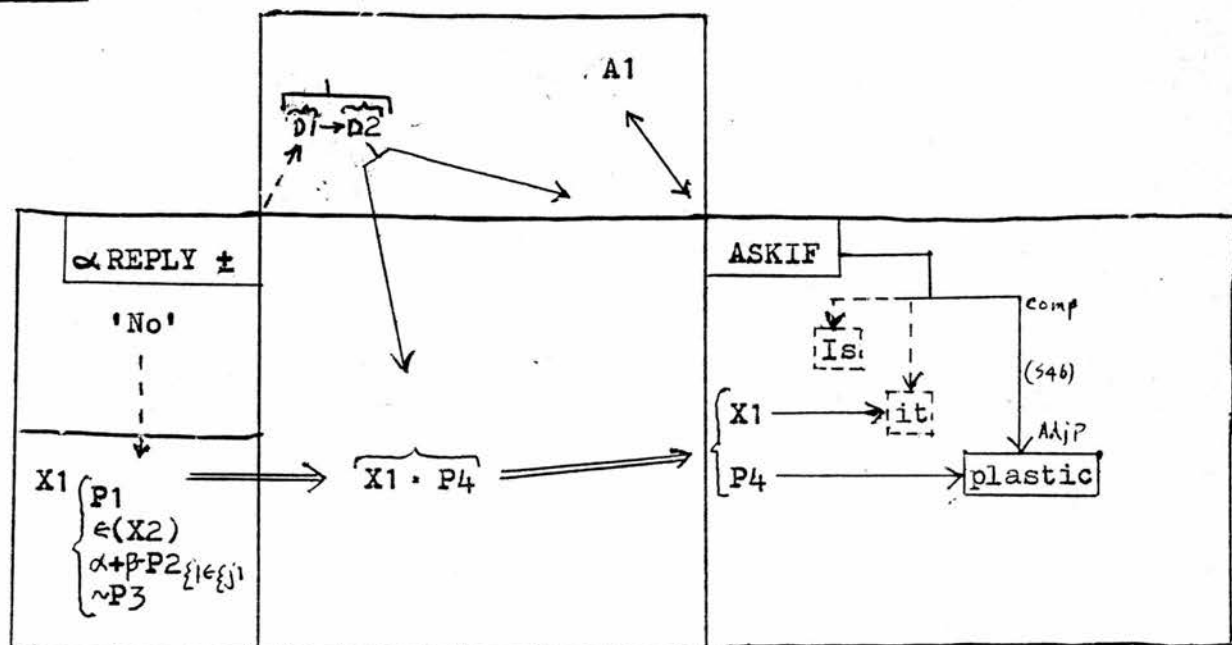
β : Is it metal?



$P3$: metal [Adj]

(α :No.)

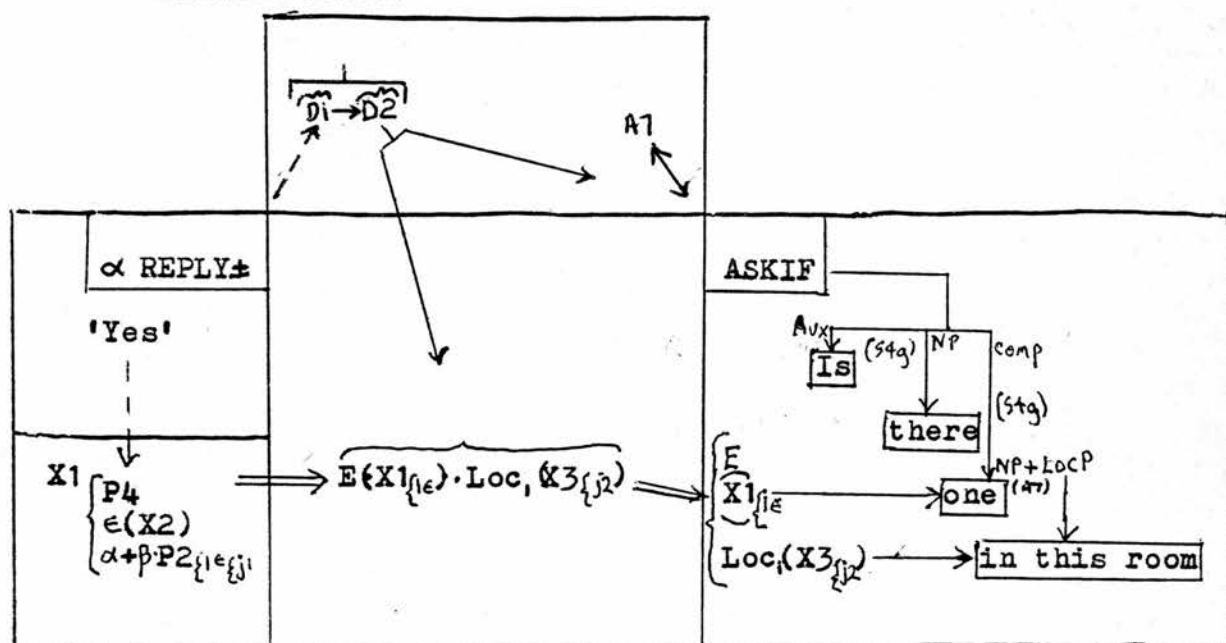
β : Plastic?



$P4$: plastic [Adj]

(α :Yes.)

β : Is there one in this room?

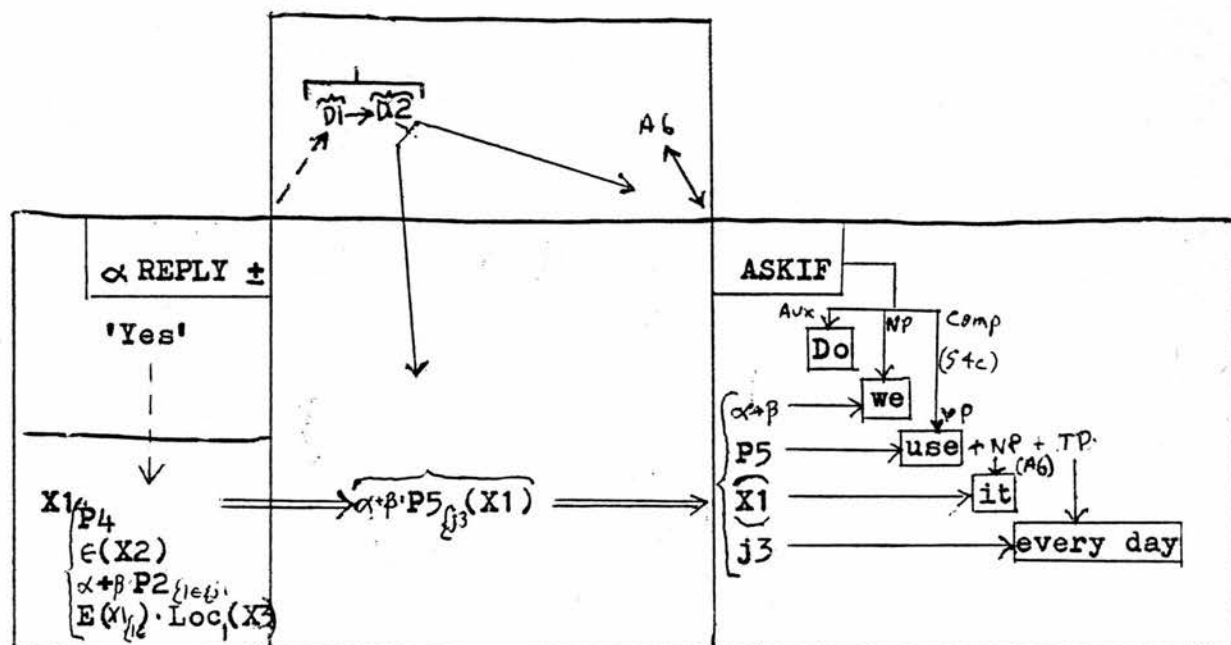


X_3 : room $[N]$

j_2 : this $[Dem]$

(α :Yes.)

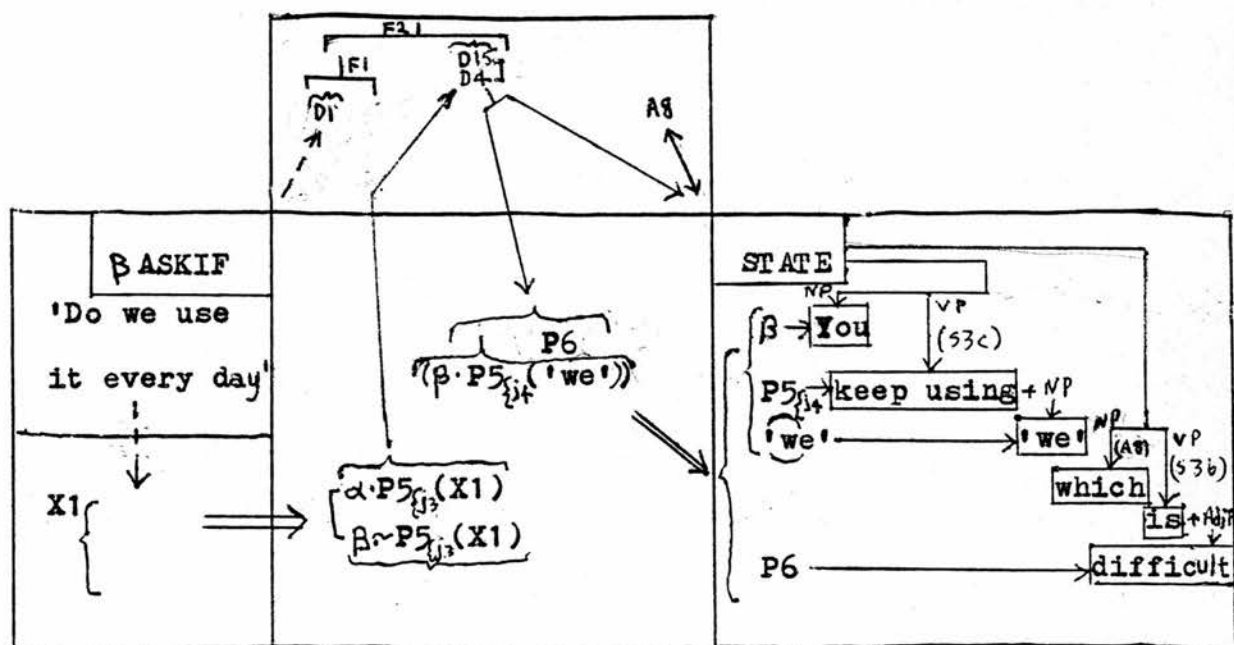
β : Do we use it every day?



P_5 : use $[V]$ (+ $[NP]$)

j_3 : every day $[TP]$

α : You keep using 'we', which is difficult.



P5: use [V] (+ [NP])

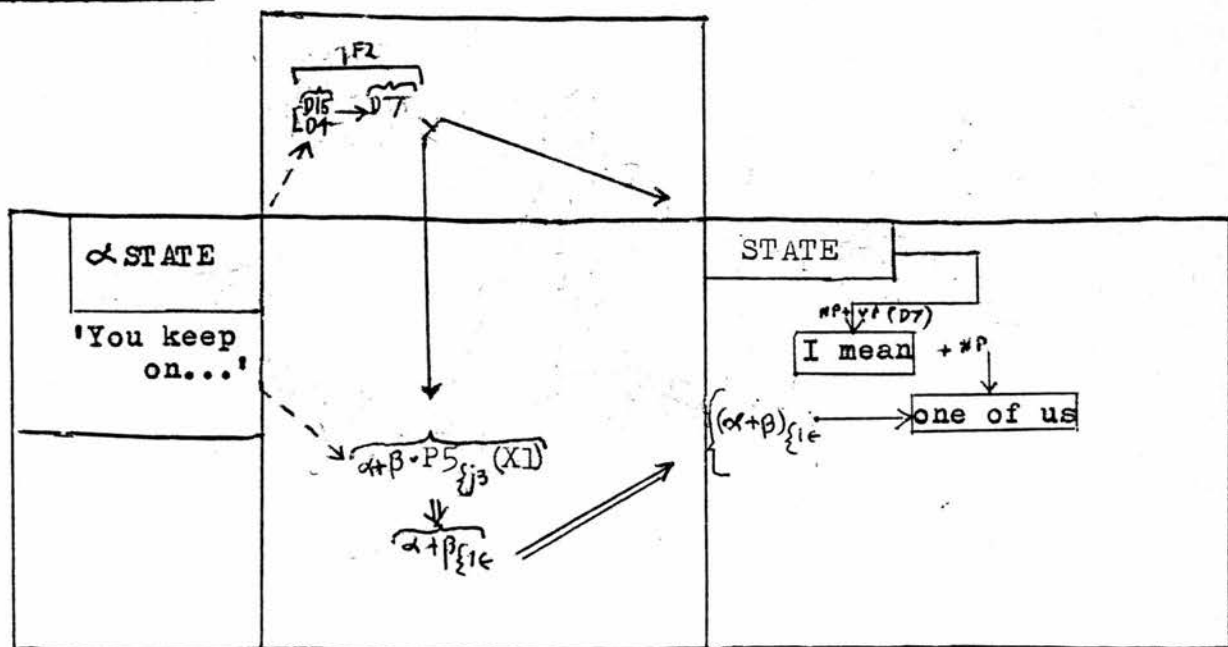
D4: Object

P6: difficult [Adj]

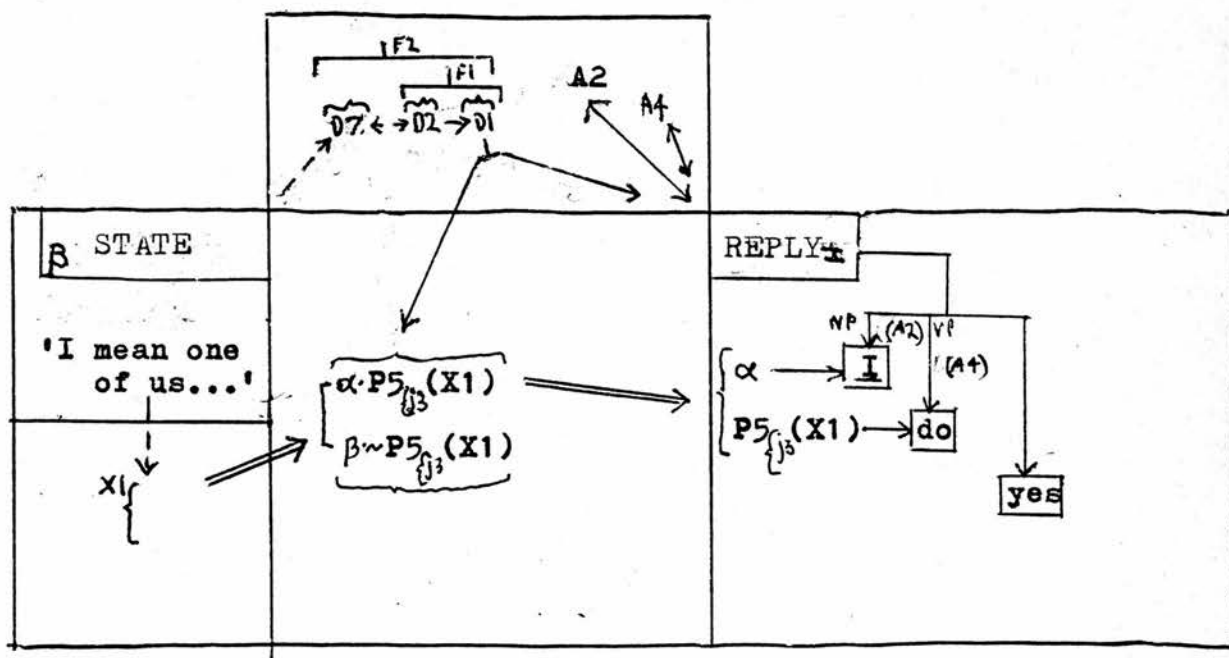
D15: Request Rephrase

$j4: \{cont\}$

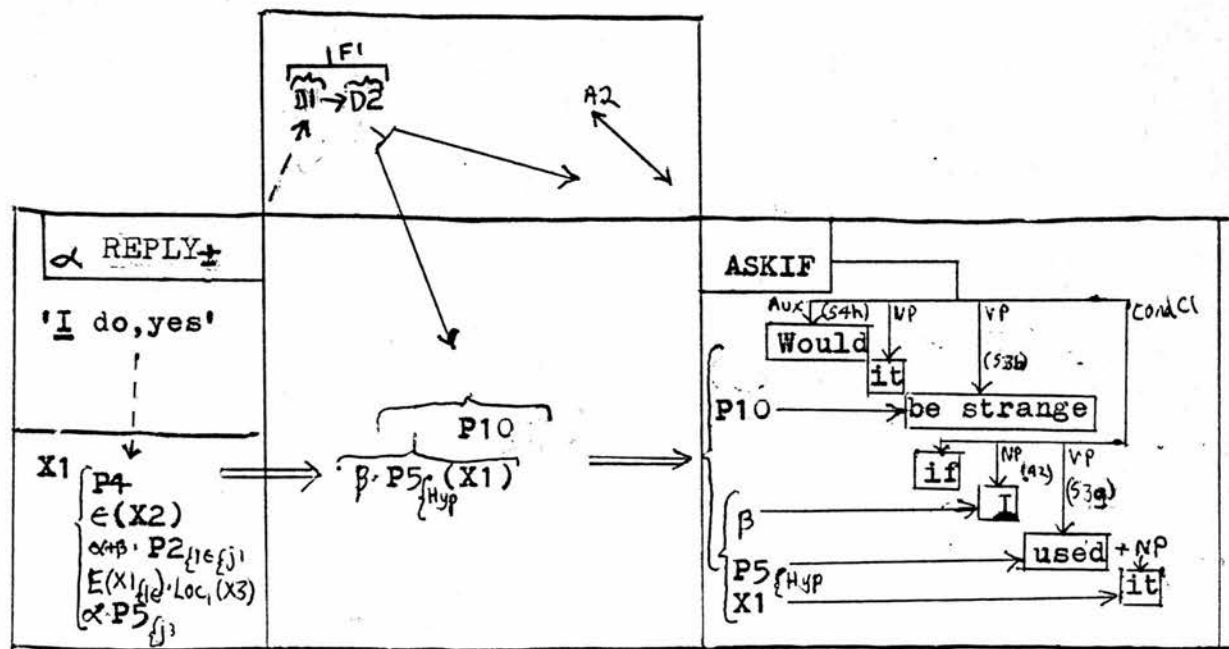
β : I mean one of us.



D7: Rephrase



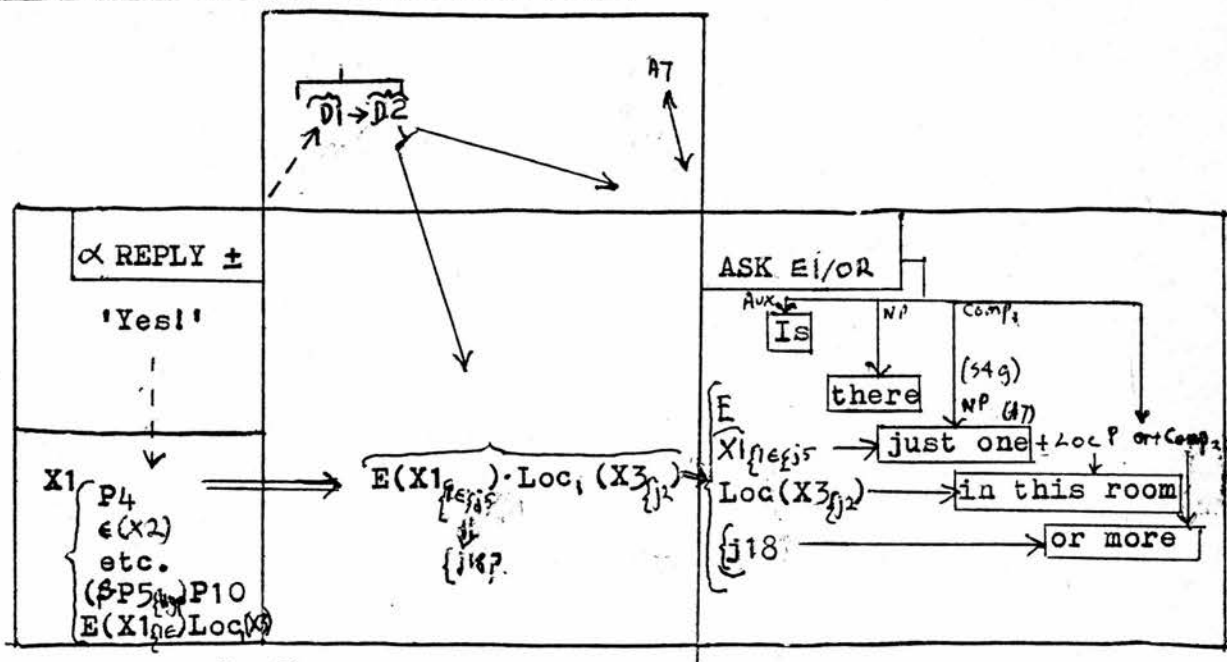
8 : Would it be strange if I used it?



P10: strange [Adj]

(α : Yes!)

β : Is there just one in this room or more?

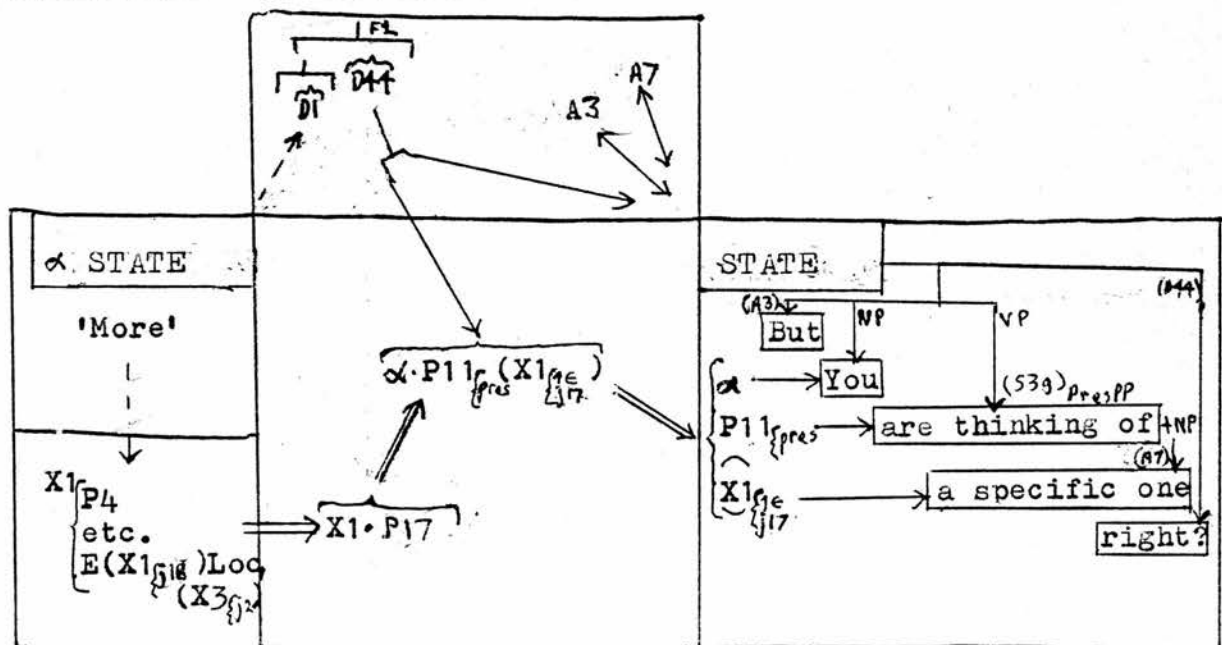


j5: just [Adv]

j18 : more (than one) [Quant]

(α : More.)

β : But you are thinking of a specific one, right?

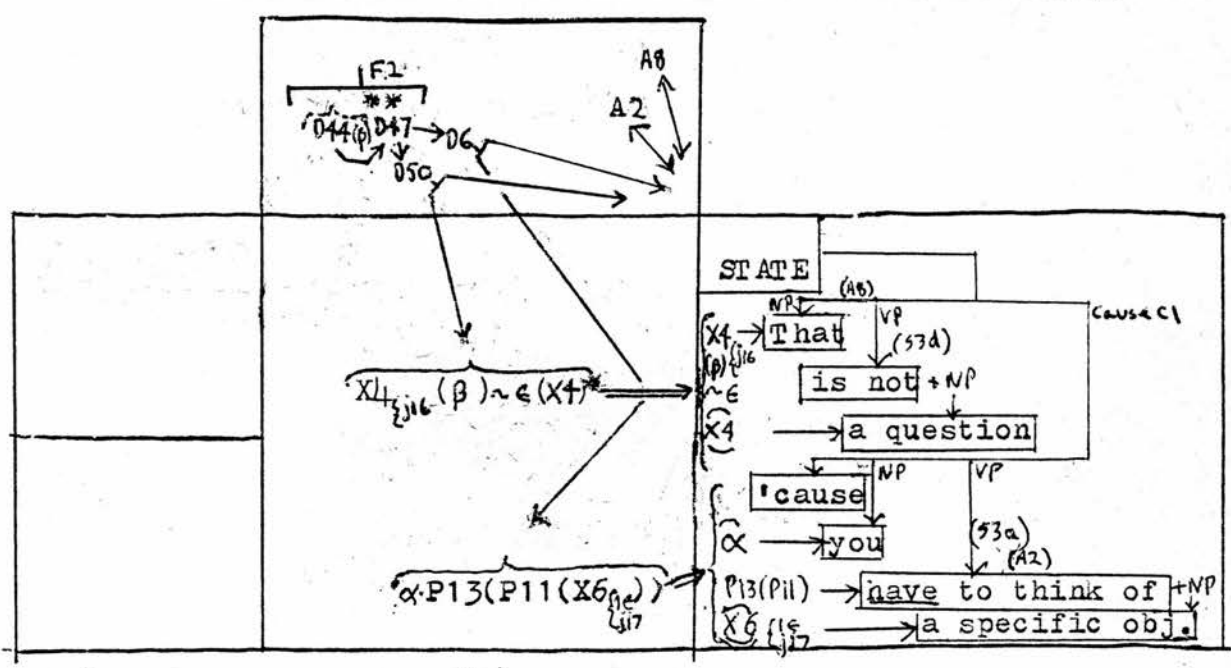


P11: think of [V] + [Prep] (+ [NP])

P/j17: specific [Adj]

D44: Request Confirmation (here: rhetorical, reminding α of rules)

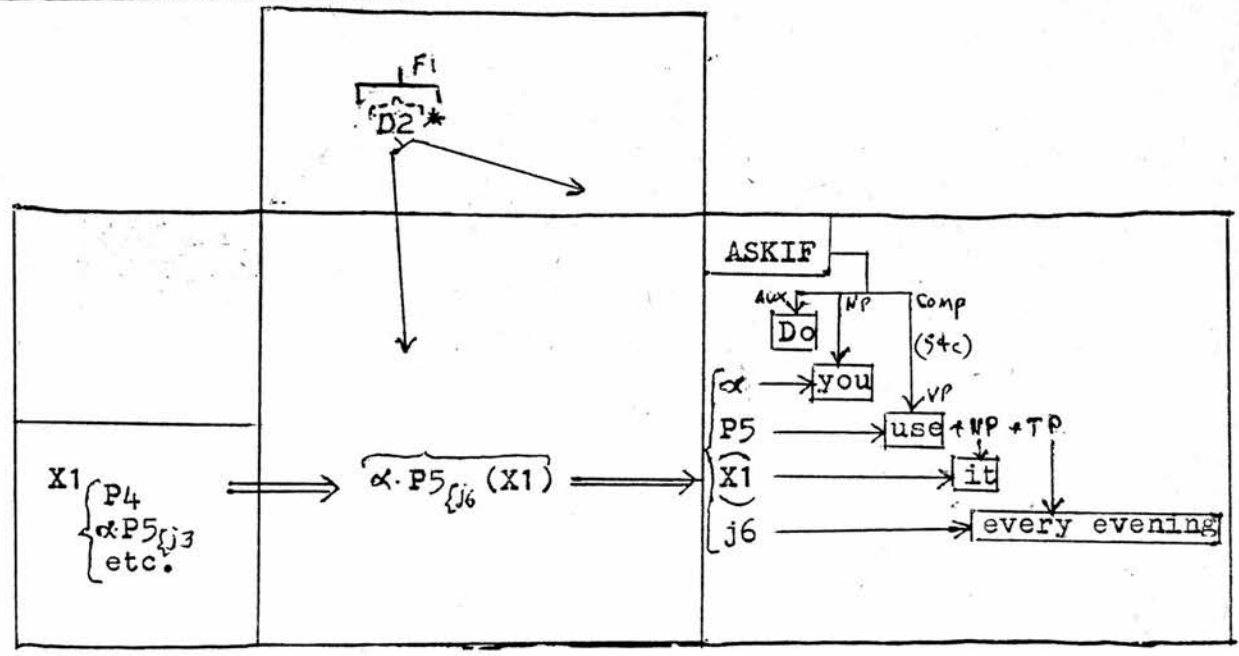
β : That's not a question, 'cause you have to think of a specific object.



- X4: question[N]
- X6 : object [N]
- D50: Declare
- D47: Prevent (here: from counting)
- P13: have to [Aux](+ [VP]) * i.e. 'game' question
- j16: last [Adj]
- D6: Justify Self

**Meta-frame recognition of possible game status of β 's question activates

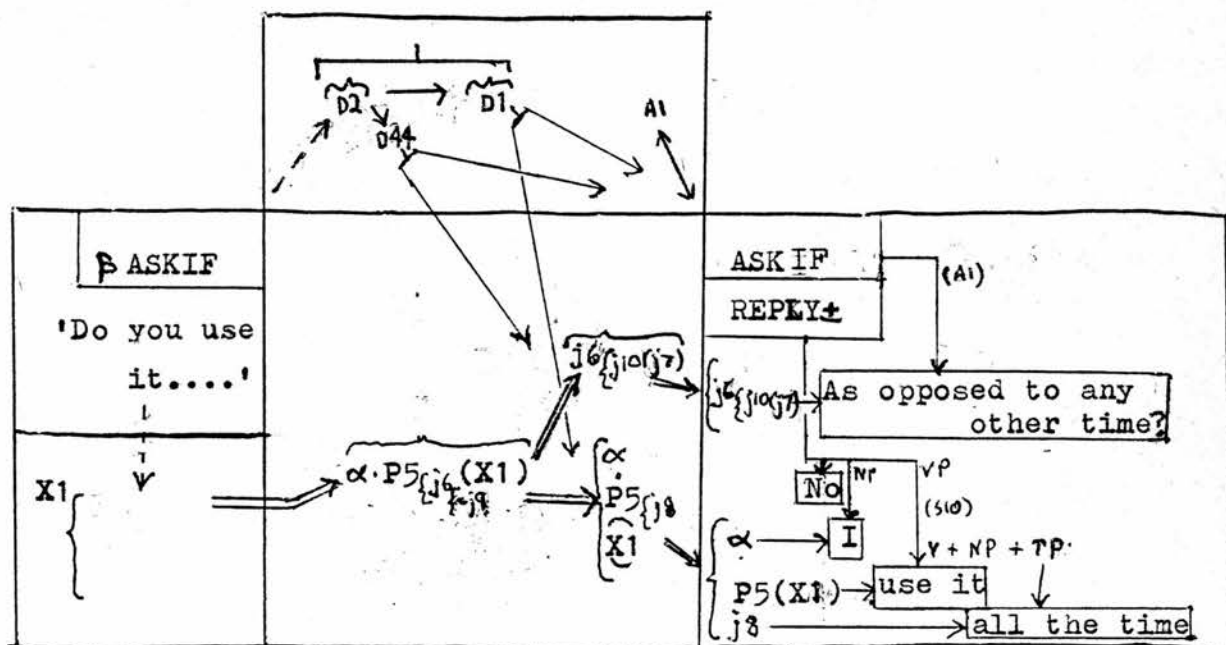
β : Do you use it in the evening?



j6: in the evening [TP]

*Suspended by excursion now terminated

α : As opposed to any other time? No, I use it all the time.



j7: any other time [TP]

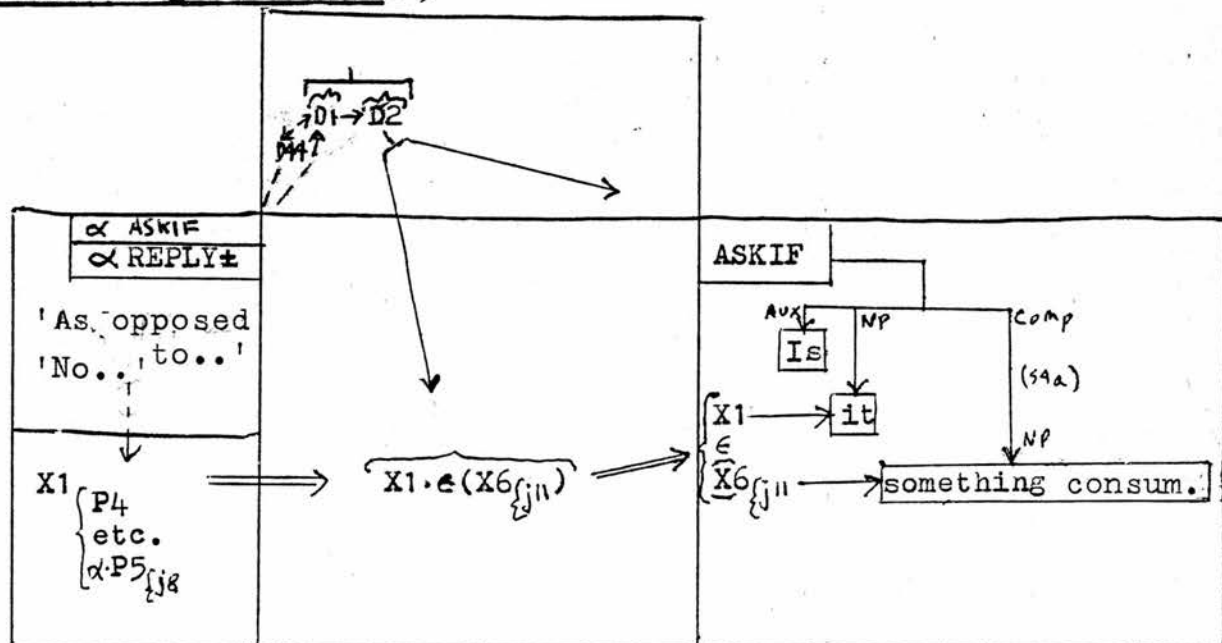
j8: all the time [TP]

j9: only [Adv]

j10: as opposed to (+[NP]) [Prep]

D44: Req. Confirmation (here: rhet.; leaves option open for β to object if hypothesis wrong)

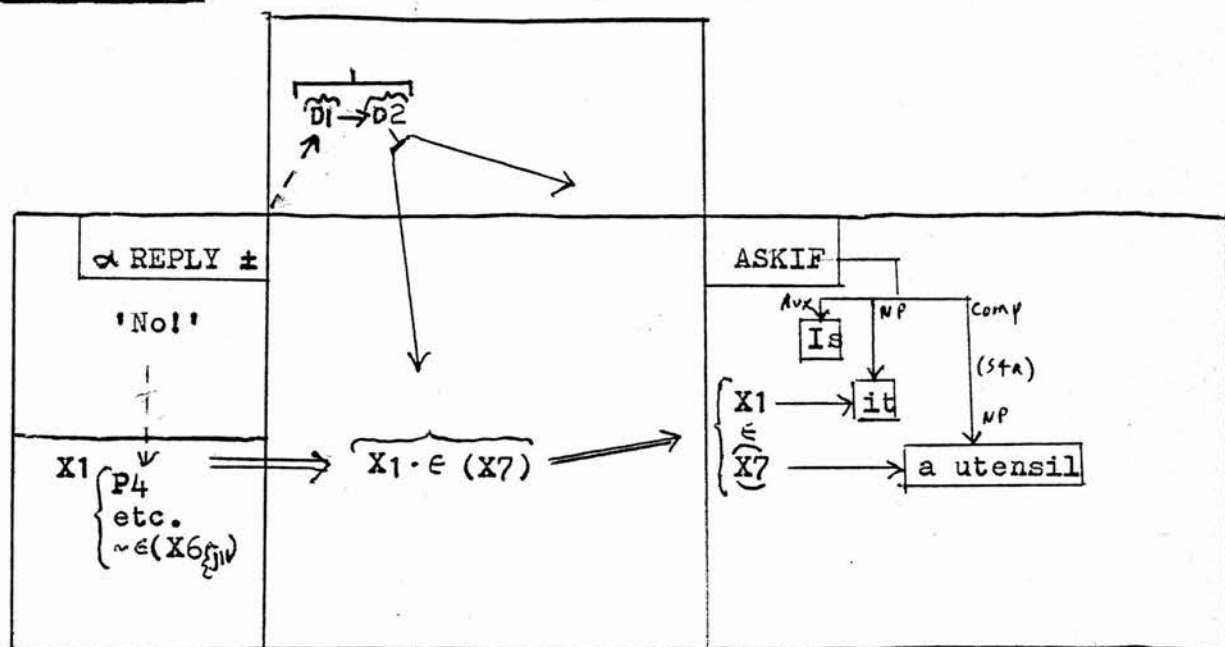
β : Is it something consumable?



j11: consumable [Adj]

(α :No!)

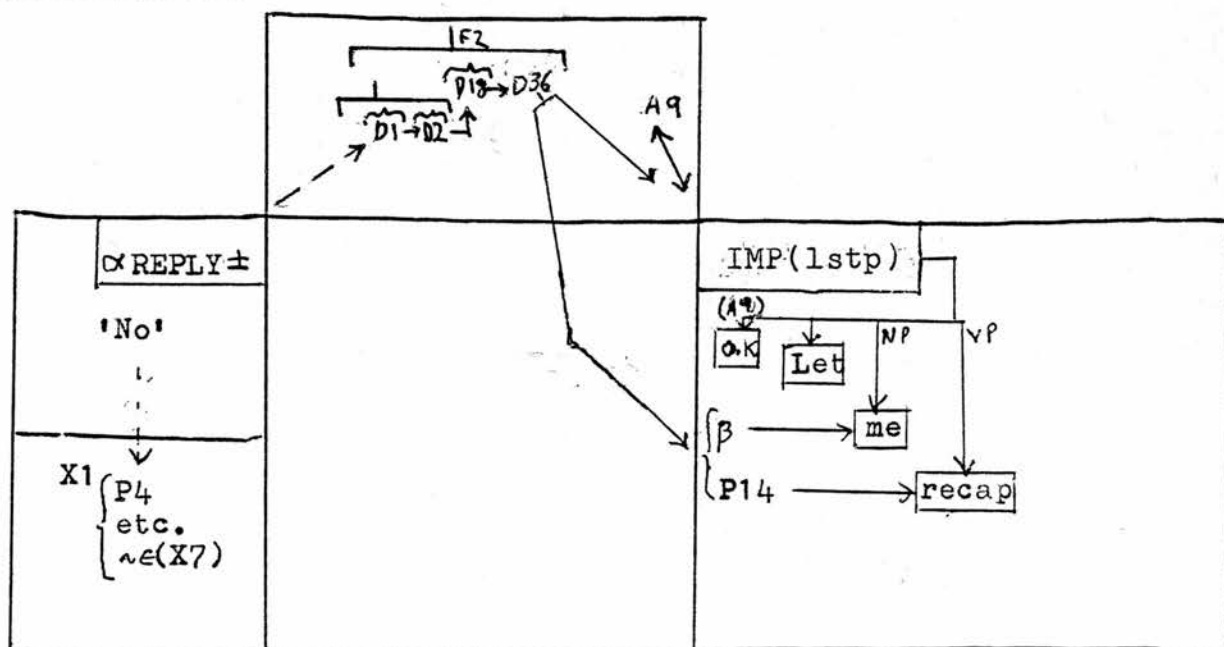
β : Is it a utensil?



$X7$: utensil [N]

(α :No.)

β : O.K., let me recap.

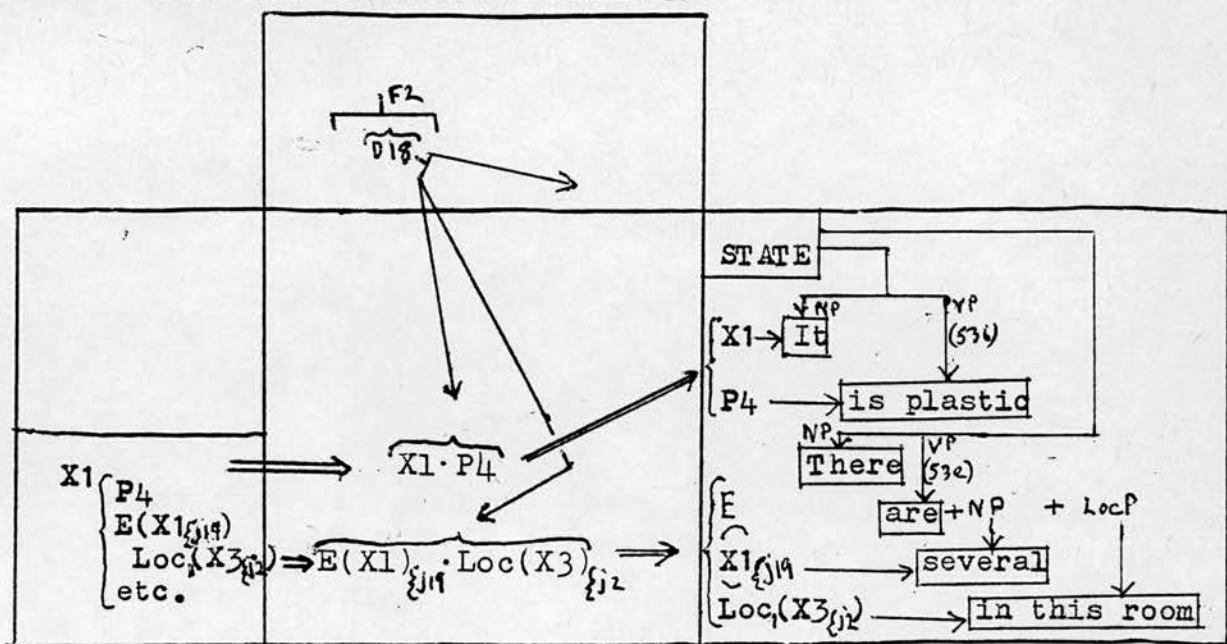


$P14$: recap[V]

$D18$: Recap

$D36$: State Intent

β : It's plastic; there are several in this room...(etc.)

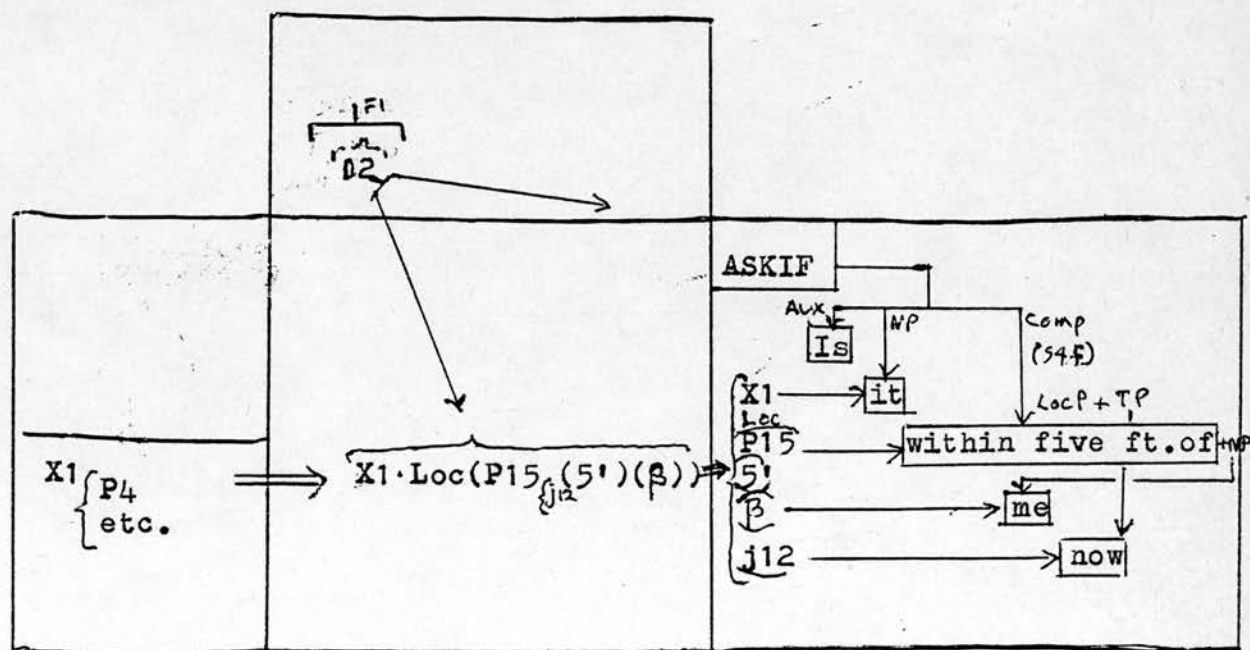


D18: Recap

j19: several [Quant]

j2: this [Dem]

β : Is it within five feet of me now?

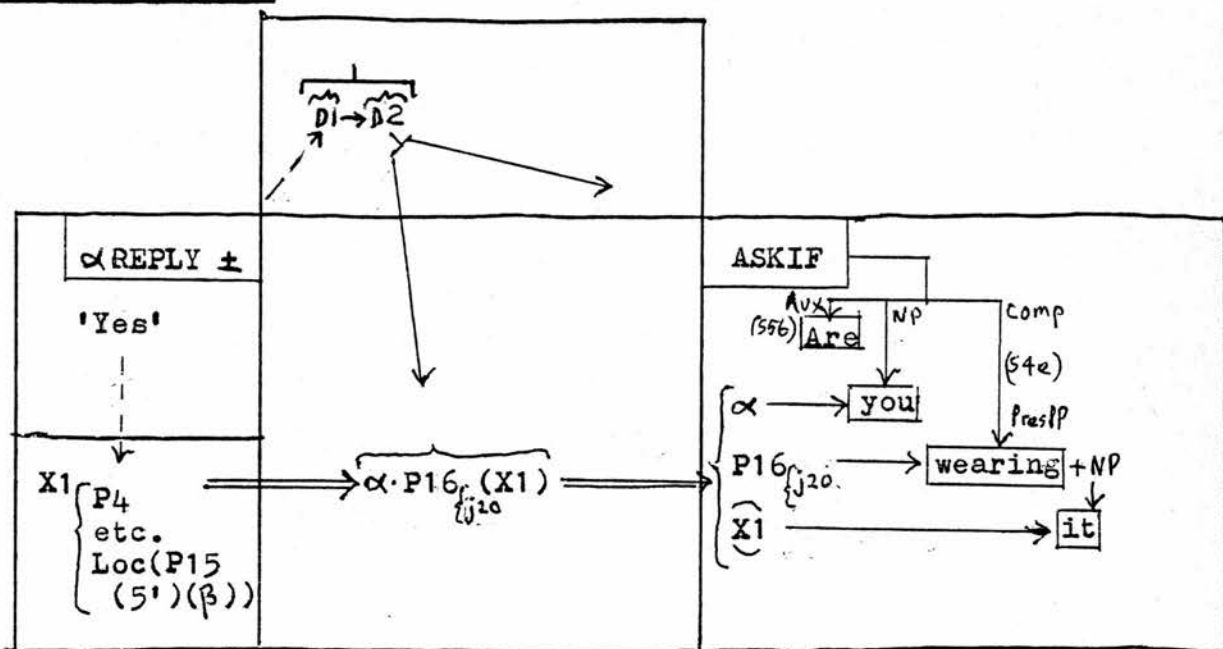


P15: within (X feet) of [Prep] (+ [NP])

j12: now [Adv]

(α :Yes.)

β :Are you wearing it?

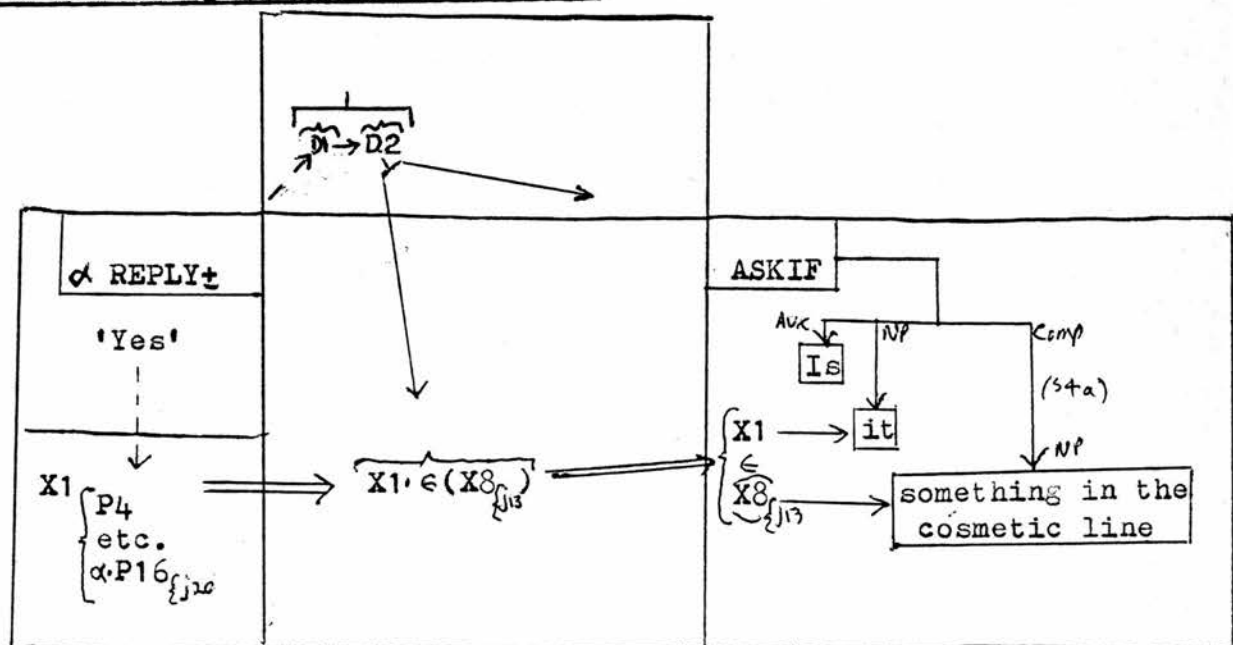


$P16$: wear [V] (+ [NP])

$j20$: {pres
cont

(α :Yes.)

β :Is it something in the cosmetic line?

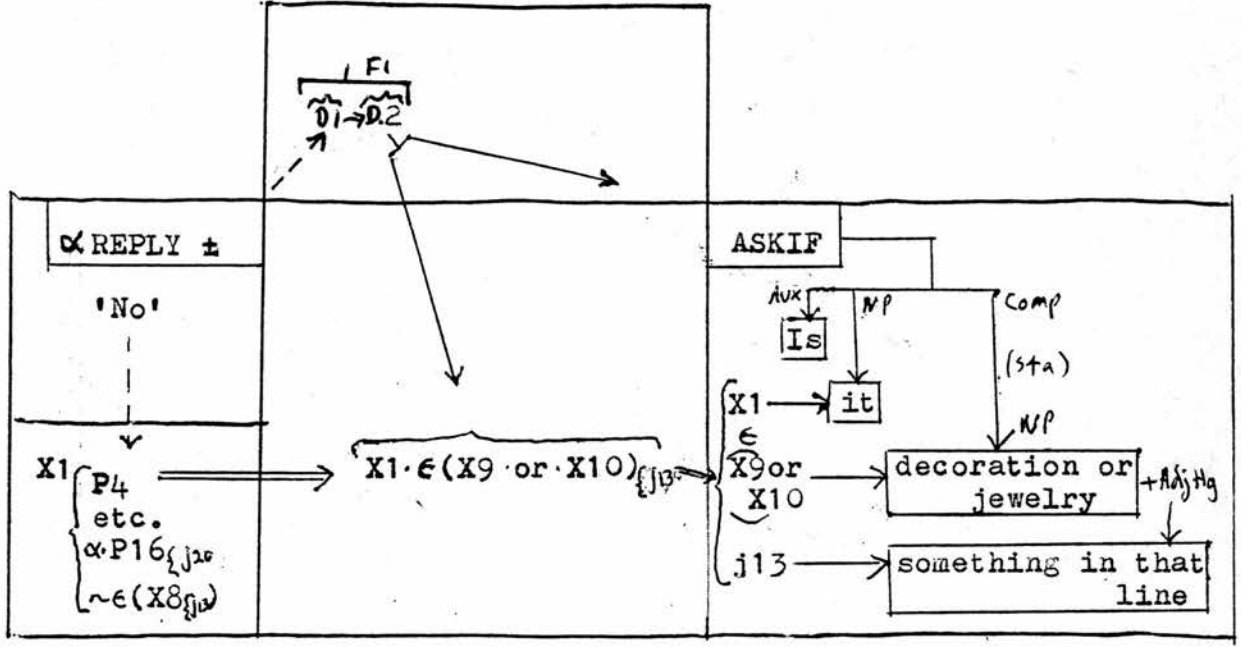


$X8$: cosmetic [N] or [Adj]

$j13$: something in the (X) line [Adj Hg]

(α :No.)

β : Is it decoration or jewelry, something in that line?

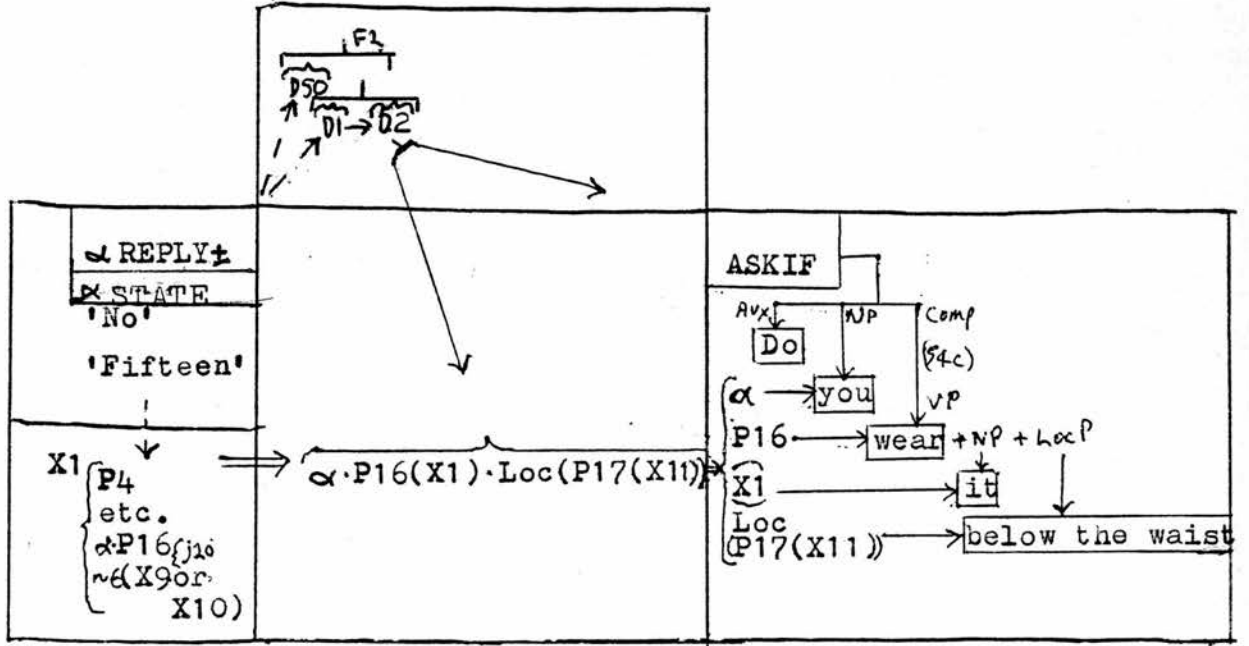


X9: decoration [N]_{ma}

X10: jewelry [N]_{ma}

(α :No.Fifteen.)

β : Do you wear it below the waist?

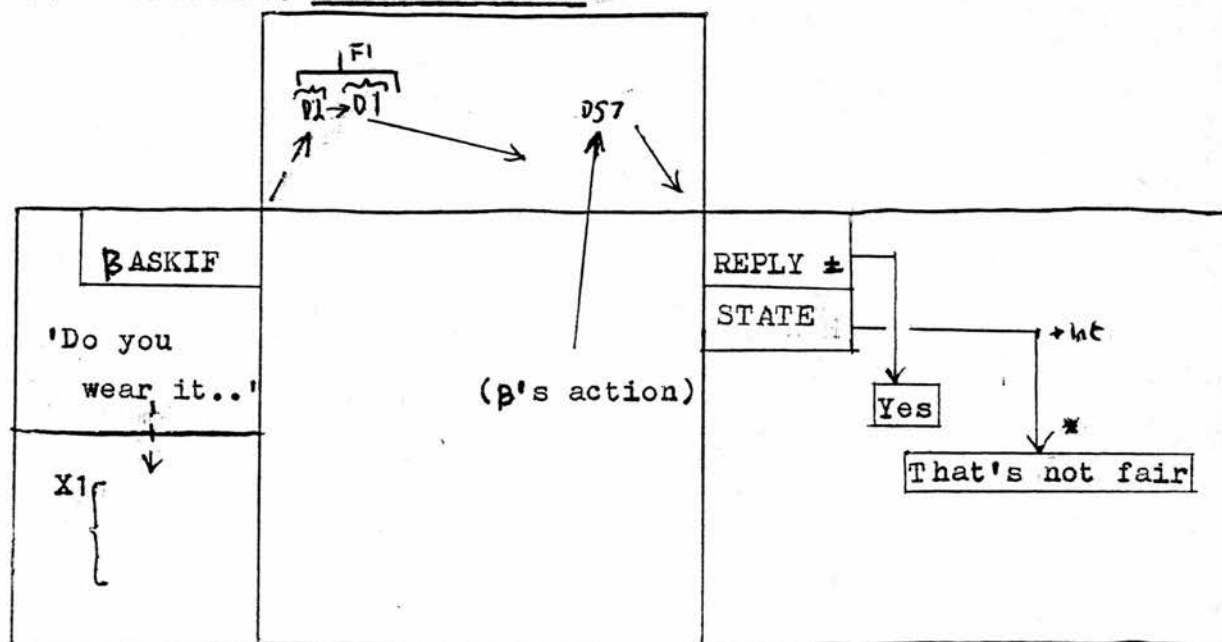


P17: below [Prep]

D50: Declare

X11: waist [N]

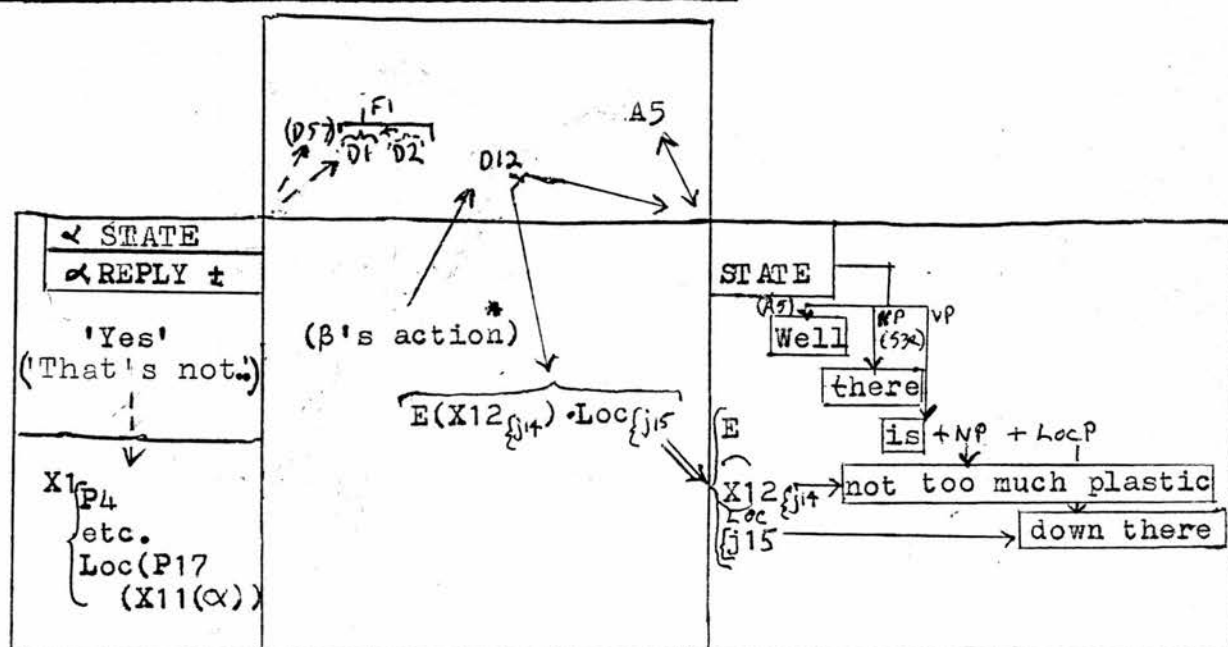
α : Yes... (Interference) That's not fair!



D57: Express Indignation

* Whole utterance treated as an idiomatic unit

β : Well, there is not too much plastic down there.



X12 : plastic[N] (corres. to P4)

j14 : not too much[Quant]

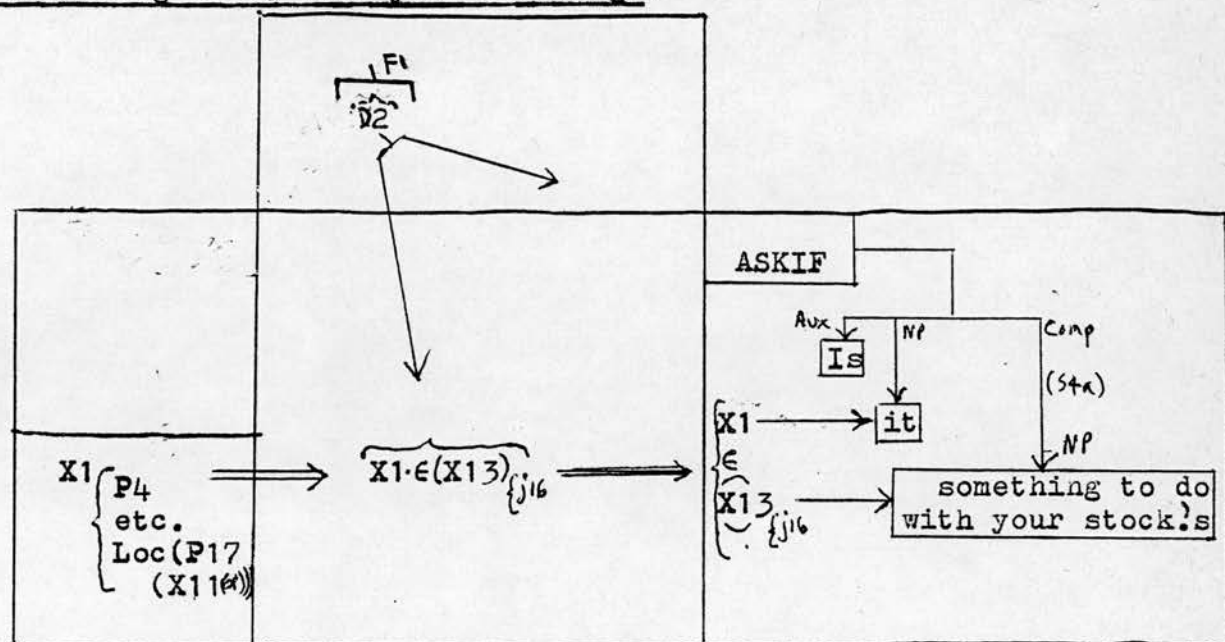
j15 : down there[Adv]

* Search motivated (in part)

by nature of F1

D12: Comment

β : Is it something to do with your stockings?

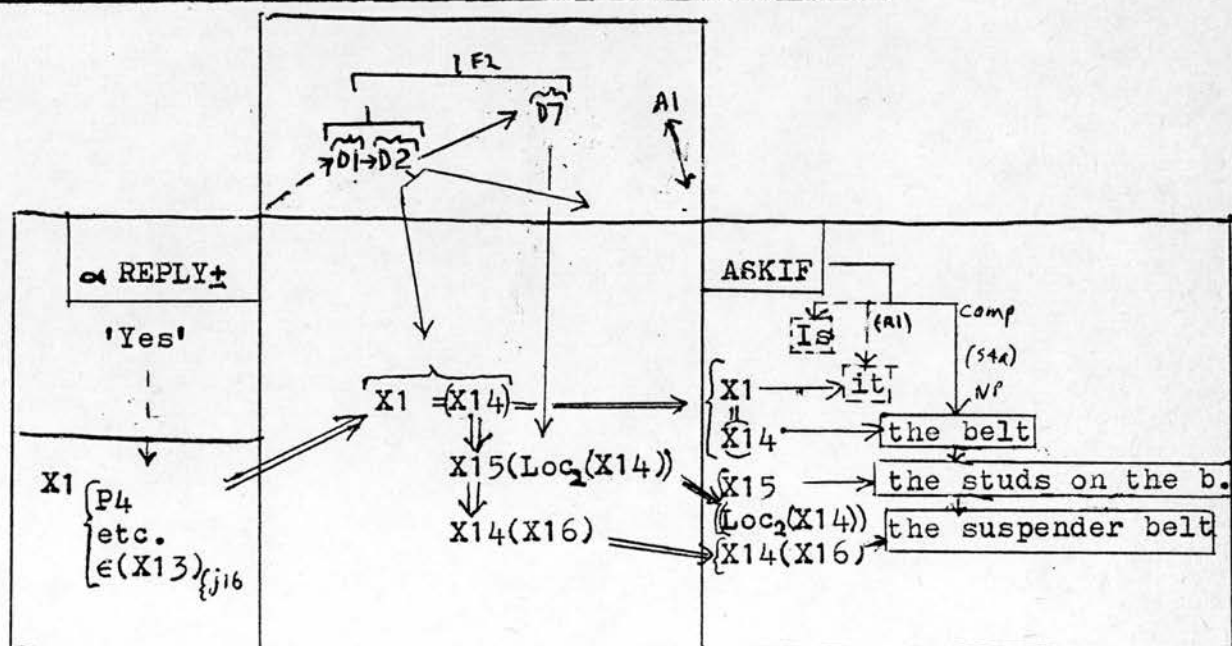


$X13$: stockings [Npl]

$j16$: something to do with (X) [AdjHg]

(α : Yes.)

β : The belt - the studs on the belt - the suspender belt?



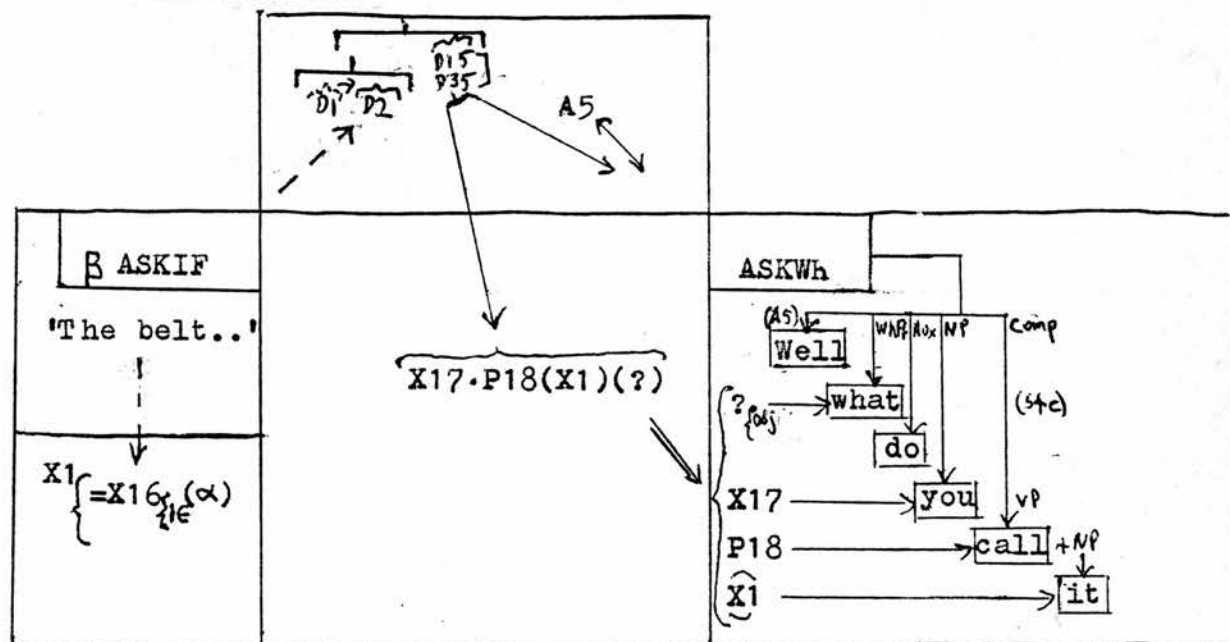
$X14$: belt [N]

$D7$: Rephrase

$X15$: studs [Npl]

$X16$: suspender [N]

α : Well, what do you call it?



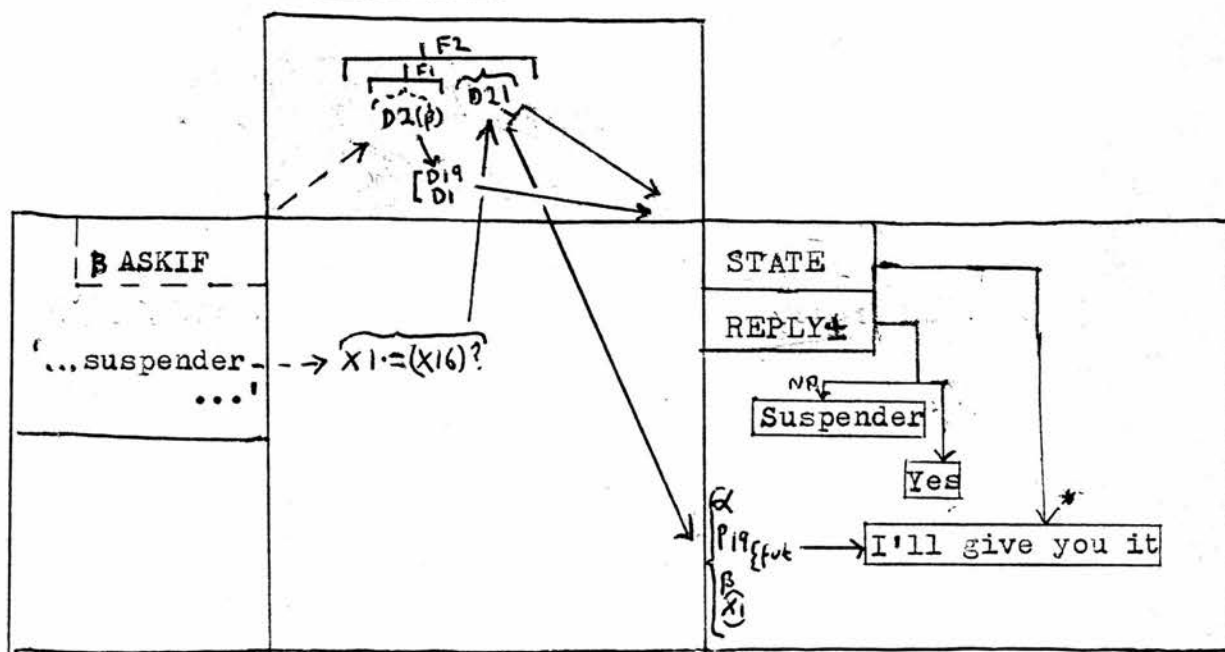
X17: you(impers.) [Pr]

D15: Request Rephrase

P18: call [V] (+ [NP])

D35: Prompt

α : Suspender - yes; I'll give you it.



D21: Concede

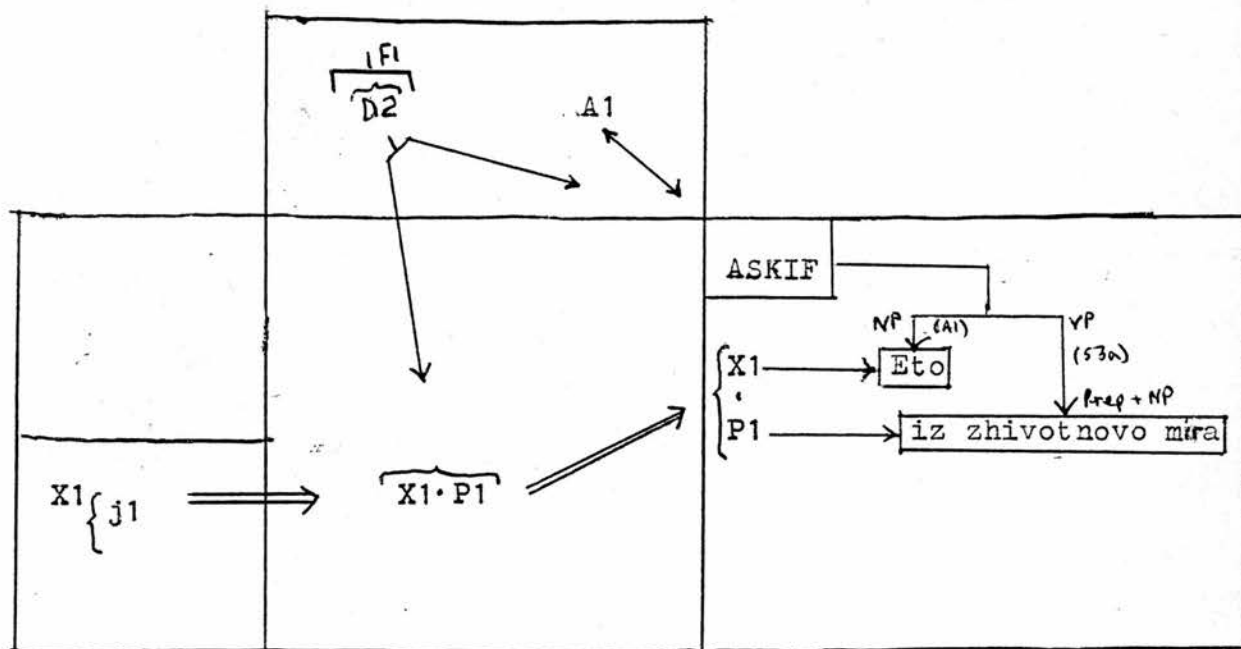
P19: give [V] (+ [NP])

D1: Answer

D19: Echo

*Treated as idiom

α: Eto iz zhivotnovo mira?



j1: {sing
conc

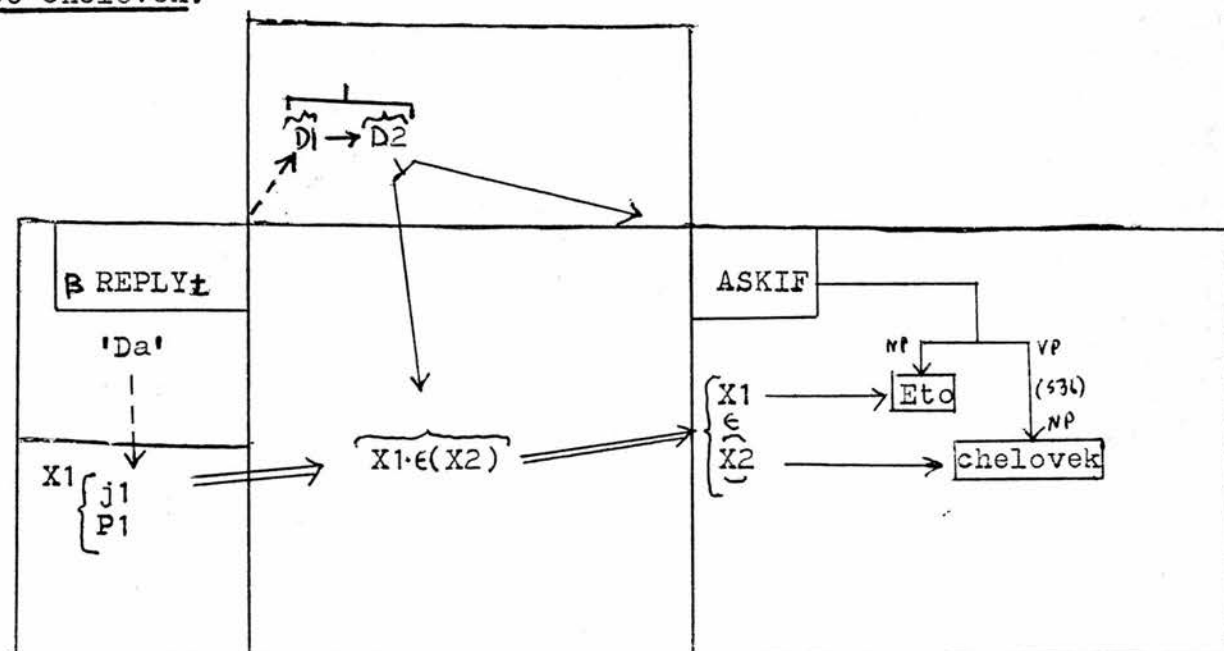
('eto' : it/ that; neuter pronoun)

P1: iz zhivotnovo mira [Prep] + [Adj] (gen. sing. neuter) + [N] (gen. sing. neuter) (out of the animal world)

('iz' (+ gen. case) : out of/ (is a) member of)

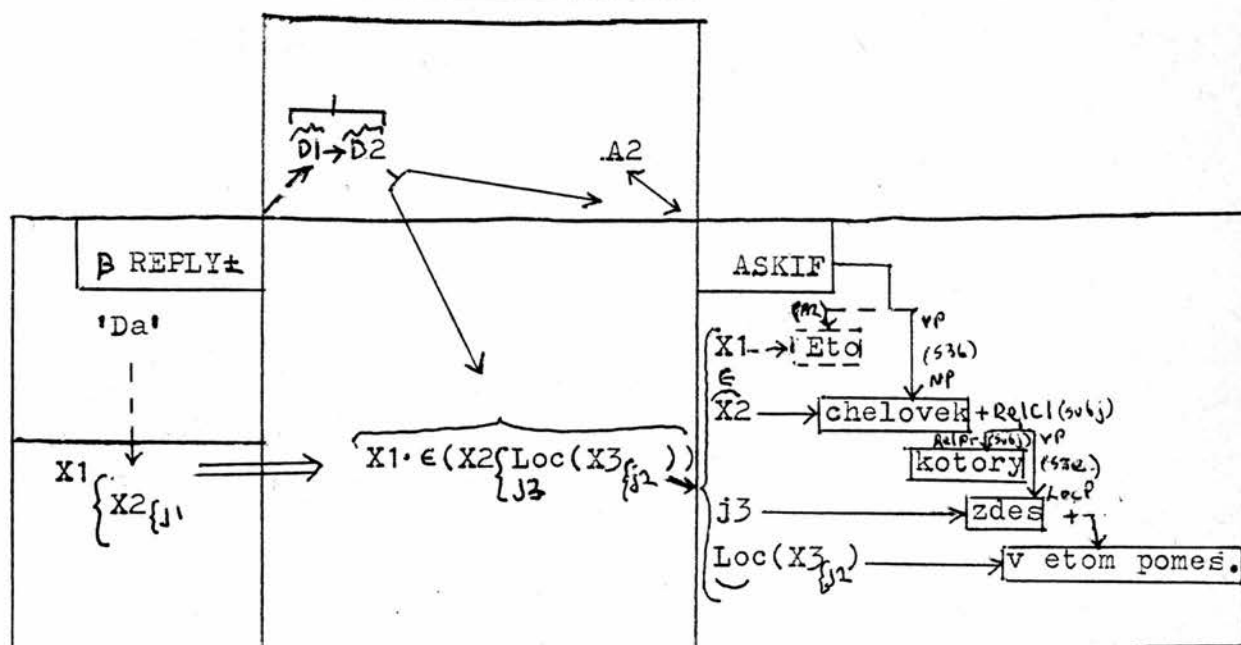
(β: Da.)

α: Eto chelovek?



X2: chelovek [N]

*The transcription omits palatalization

(p: Da.) α : Chelovek kotory zdes v etom pomeshchenii ?

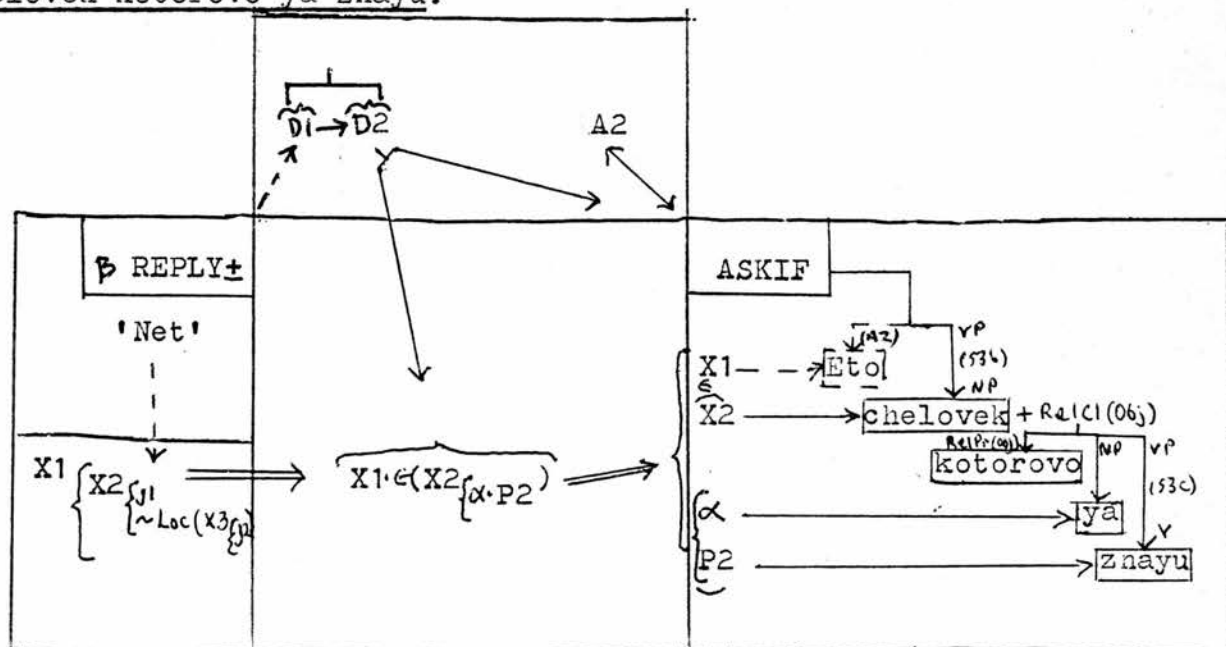
('kotory': that(rel. pron., masc. sing.))

j3: zdes[Adv] (here)

X3: pomeshchenie[N](room) (loc.case : - enii)

j2: eto [Dem] (neut. sing.) (this) (loc.case: etom)

('v'(+ loc. case) : in)

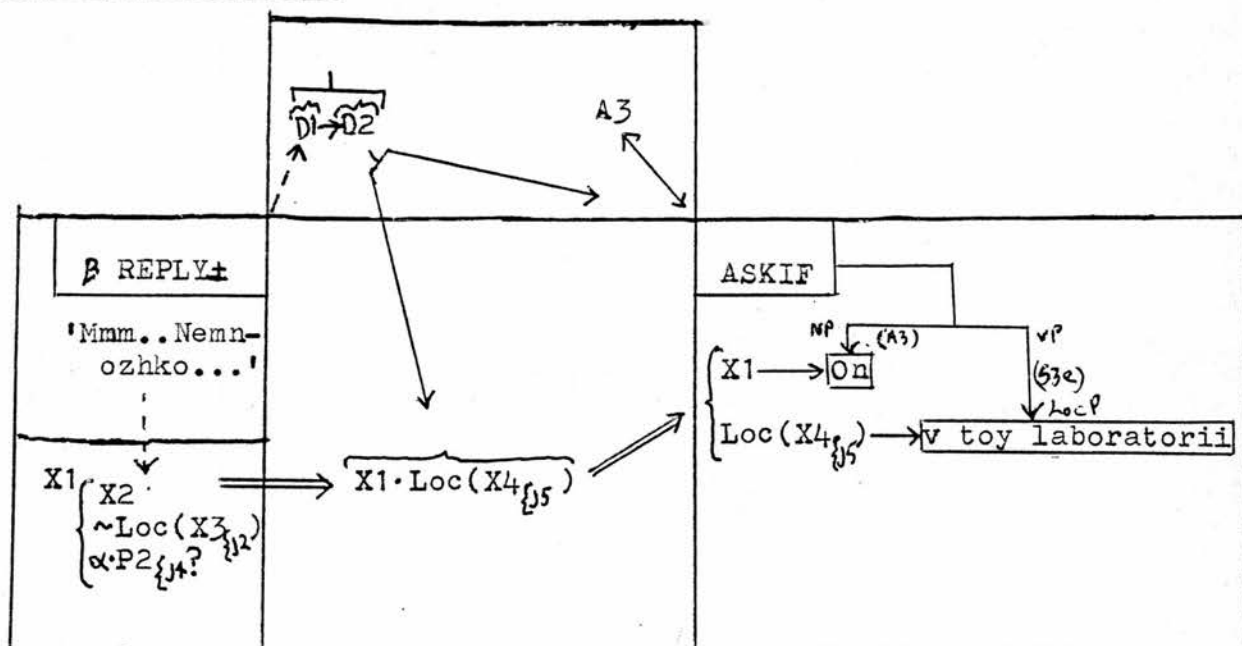
(p: Net.) α : Chelovek kotorovo ya znayu?

P2 : znat[V] (know) ('znayu': 1st p. sing., pres.)

('ya' : I) ('kotorovo': gen. sing. masc., object of 'znat')

(β : Gmm...Nemnozhko.Vozmozhno.)

α : On v toy laboratorii?



j4: nemnozhko [Adv] (a little)

('vozmozhno': possibly)

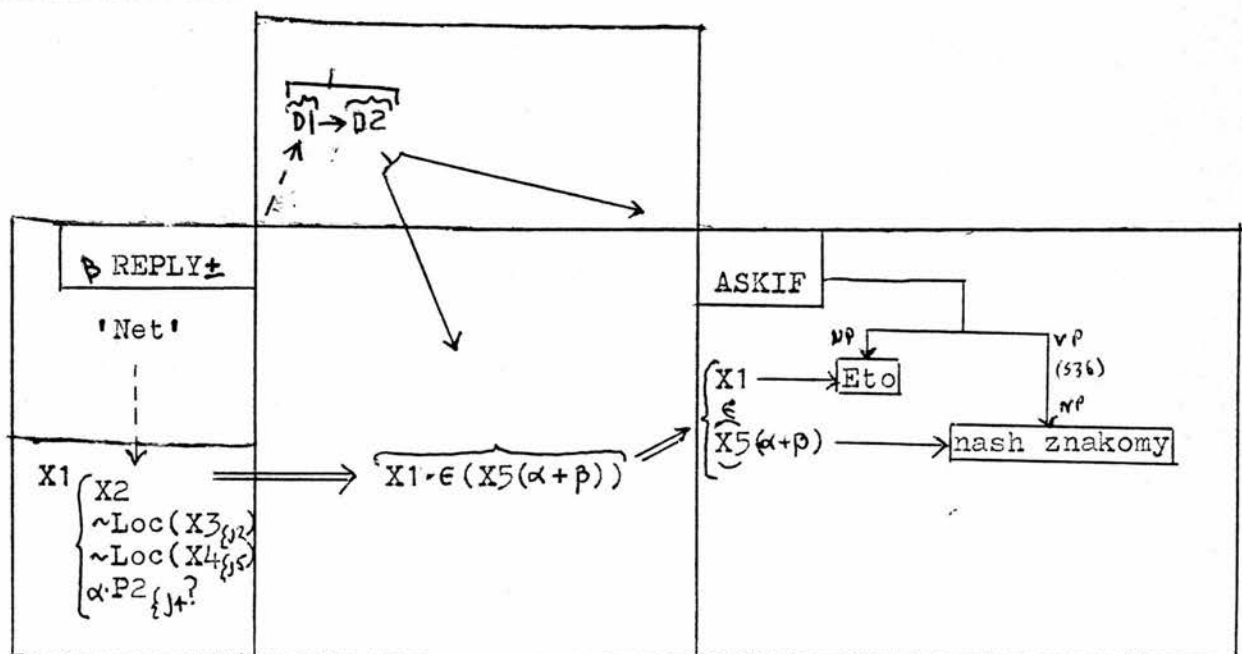
X4: laboratoria [N] (laboratory) (loc. case: -orii)

j5: ta [Dem] (fem. sing.) (that) (loc. case: toy)

('on': he)

(β : Net.)

α : Eto nash znakomy?

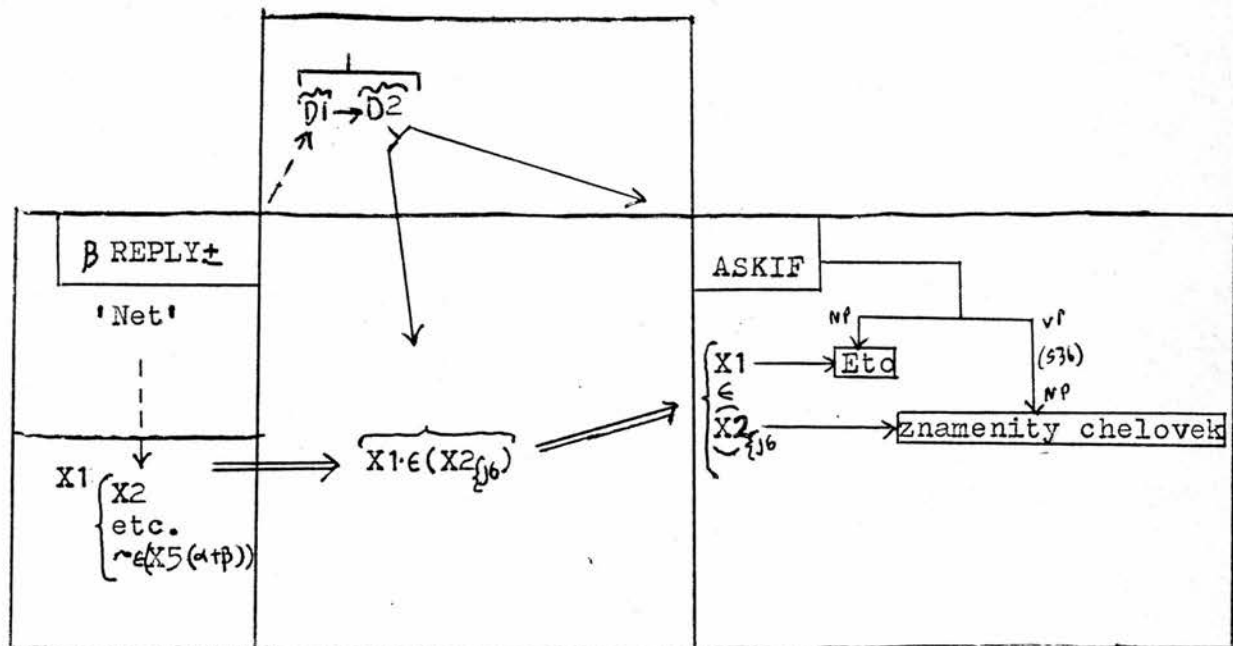


X5: znakomy [N] (acquaintance)

('nash' : our)

(β : Net.)

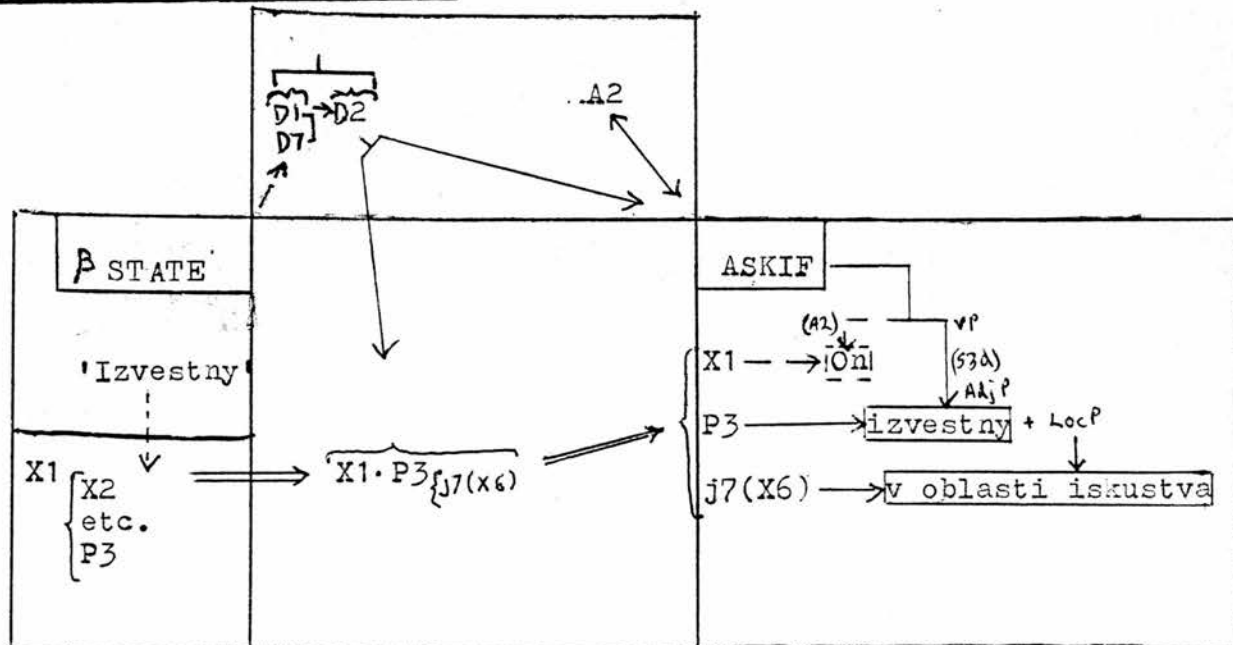
α : Eto znamenity chelovek?



j6: znamenity [Adj] (famous)

(β : Izvestny.)

α : Izvestny v oblasti iskustva?



P3: Izvestny [Adj] (well-known)

D7: Expand/ Rephrase

j7: v oblasti (+ gen. case) [LocP] X6: iskustvo [N] (neut. sing.)

(art)

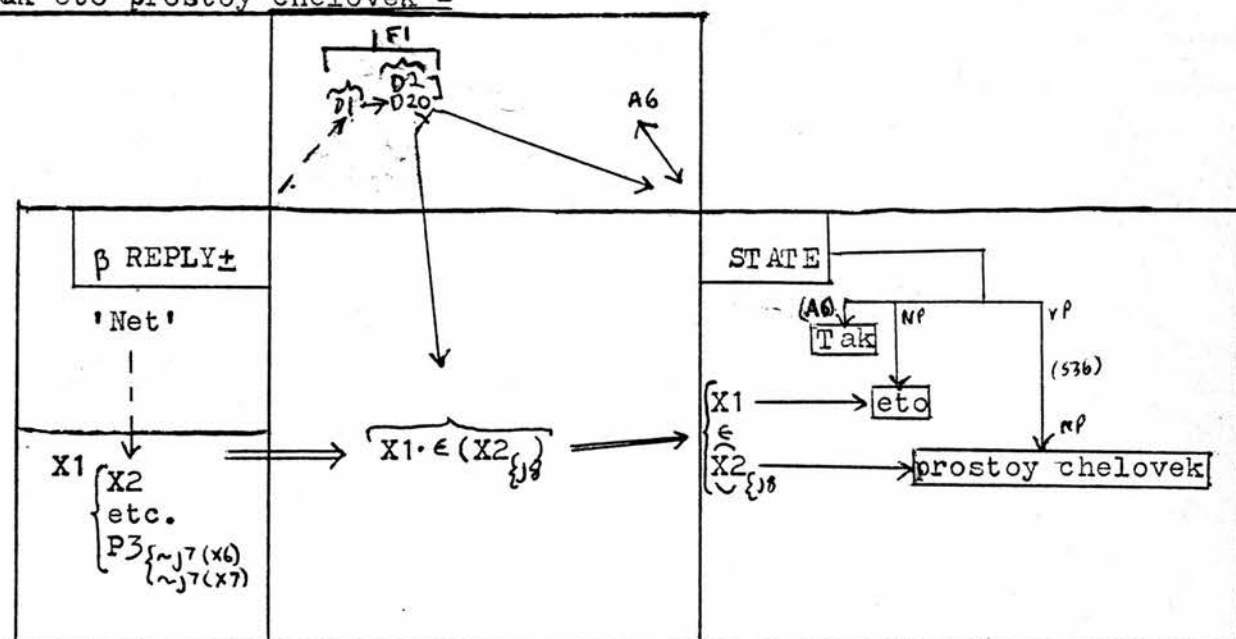
(β : Net.)

(α : V oblasti politiki?)

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(β : Net.)

α : Tak eto prostoy chelovek -



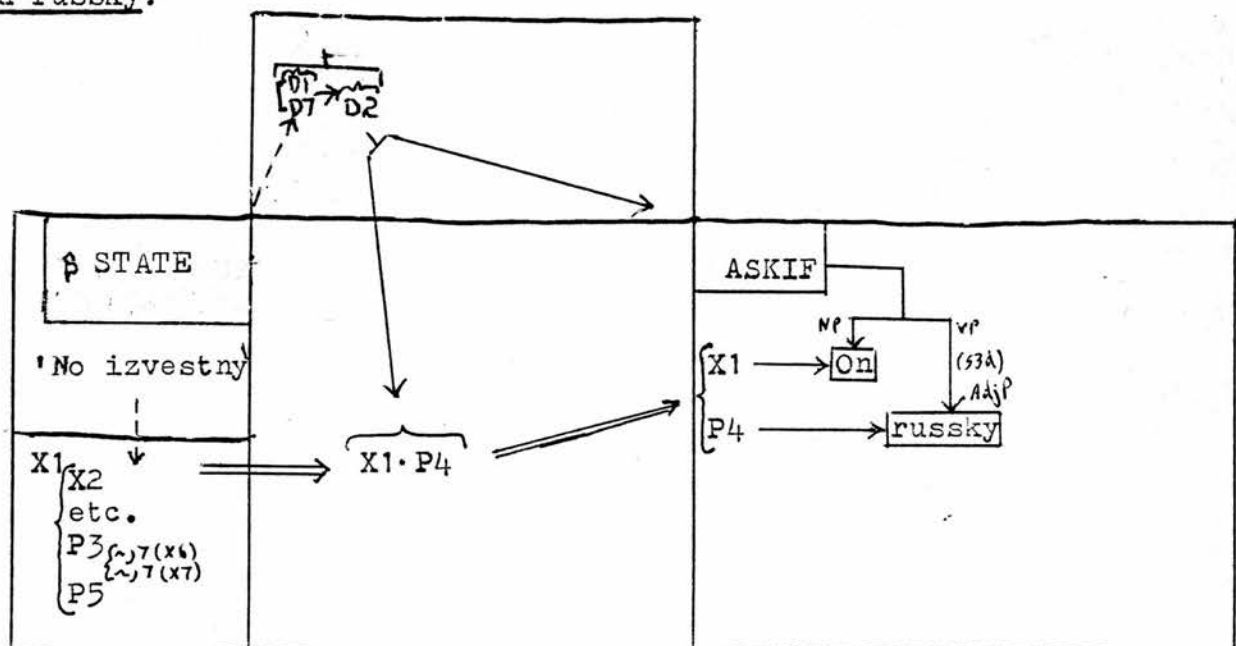
j8: prostoy [Adj] (simple/ordinary)

('tak' : so)

X7: politika [N] (politics) (gen.case: -iki)

(β : - no izvestny.)

α : On russky?



P5 : prostoy (as j8)

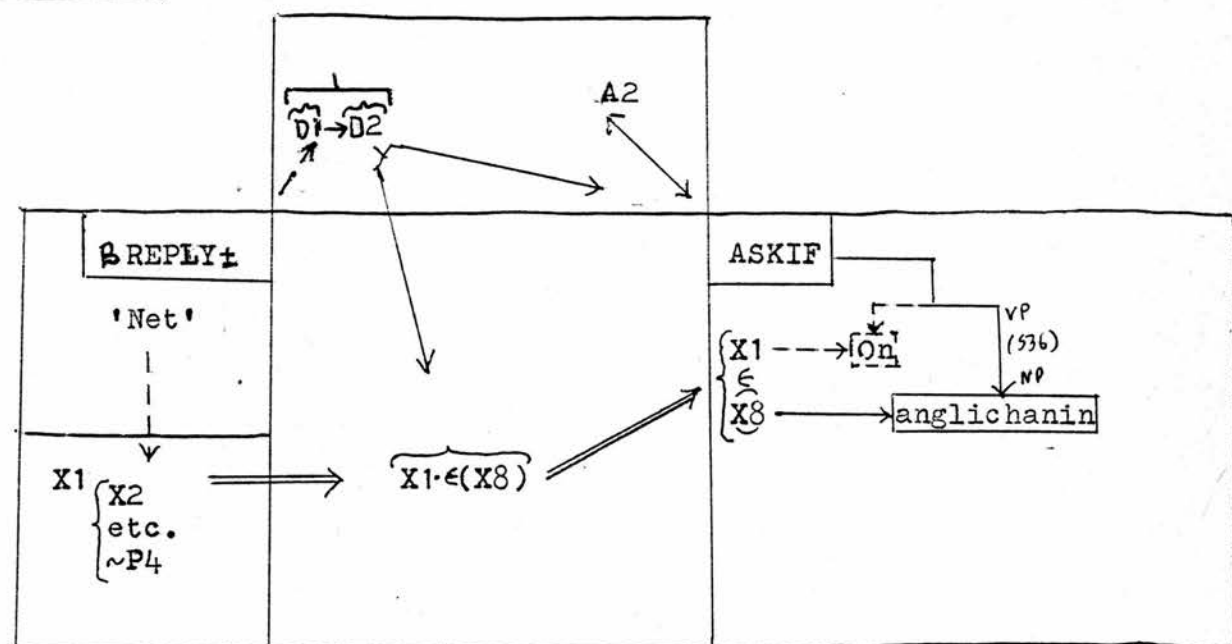
D7: Expand/Rephrase

P4: russky [Adj] (russian)

('no' : but)

(β :Net.)

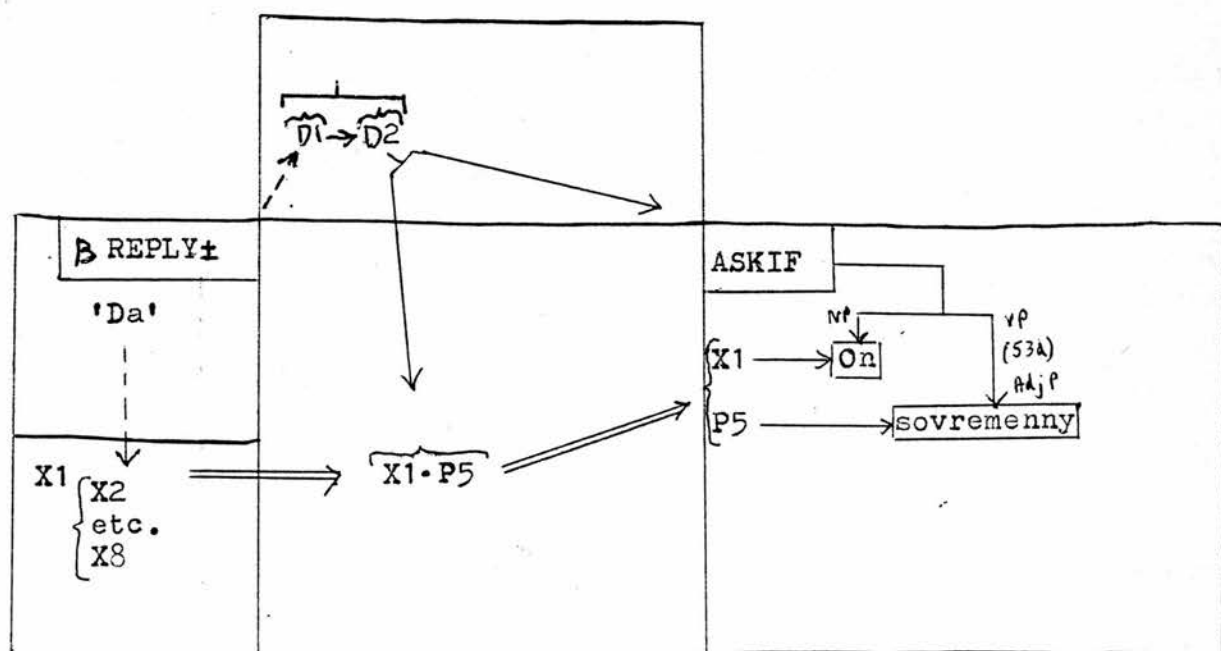
α : Anglichanin?



X8: anglichanin[N] (Englishman)

(β :Da.)

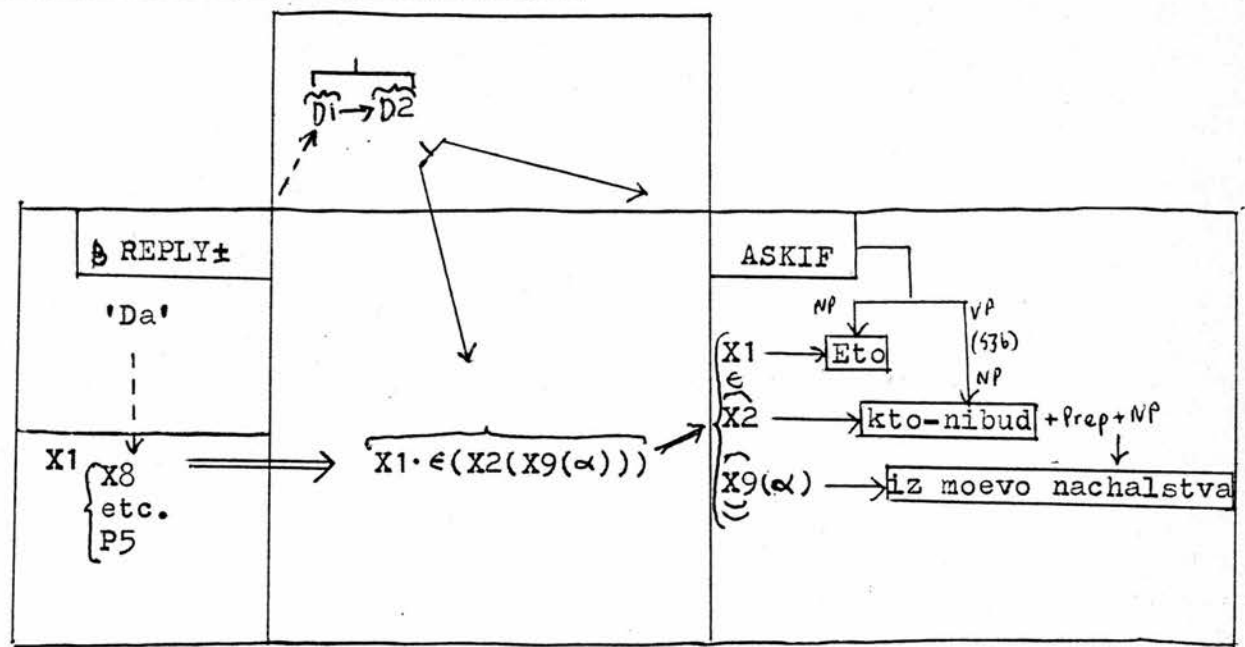
α : On sovremenny?



P5: sovremenny [Adj] (contemporary)

(β: Da.)

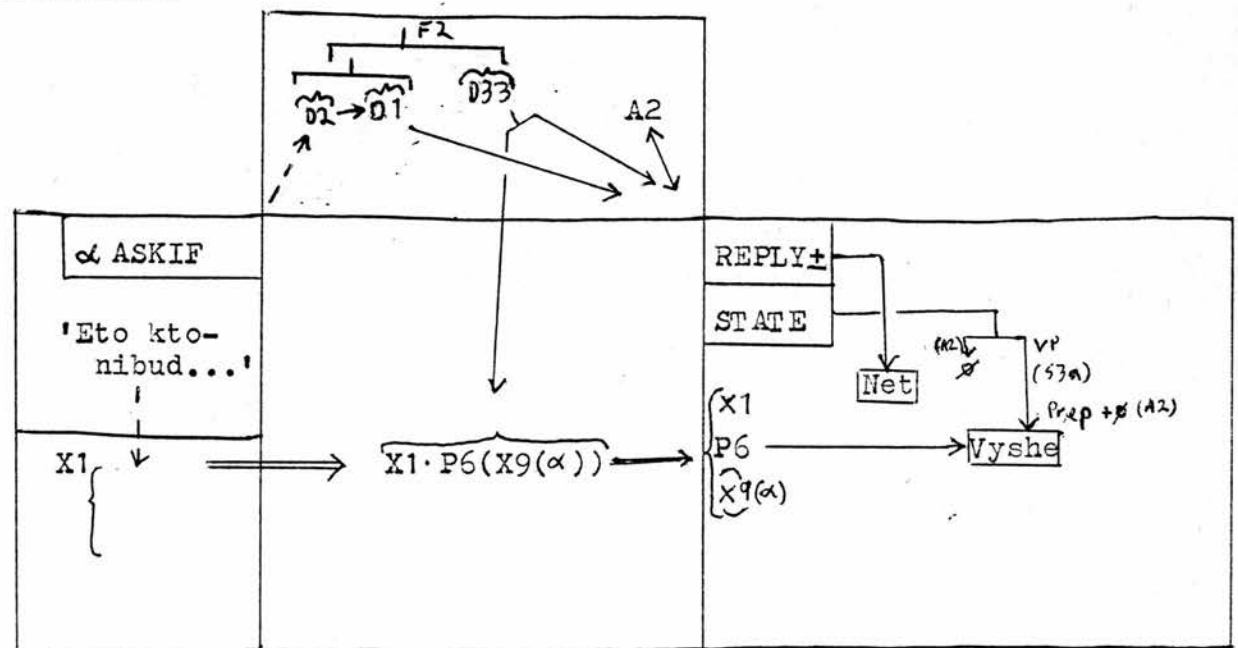
α: Eto kto-nibud iz moevo nachalstva?



X2: kto-nibud [Pr] (somebody)

X9: nachalstvo [N] (neuter sing.) (superiors/authorities) (gen.: - ('moevo' : my (gen. sing. neuter))

β: Net...Vyshe.

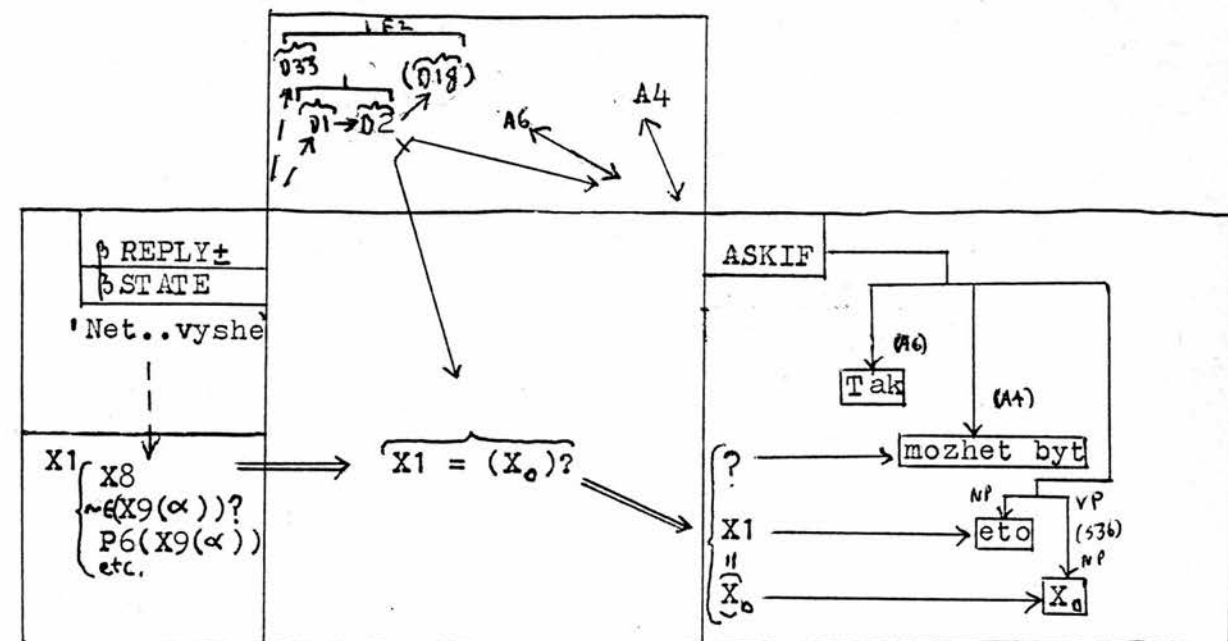


P6: vyshe [Adv] / [Prep] (+ gen.) (higher)

D33: Give Help

(α : Vyshe...iz moevo nachalstva...)

α : Tak, mozhet byt, eto X_0 ?

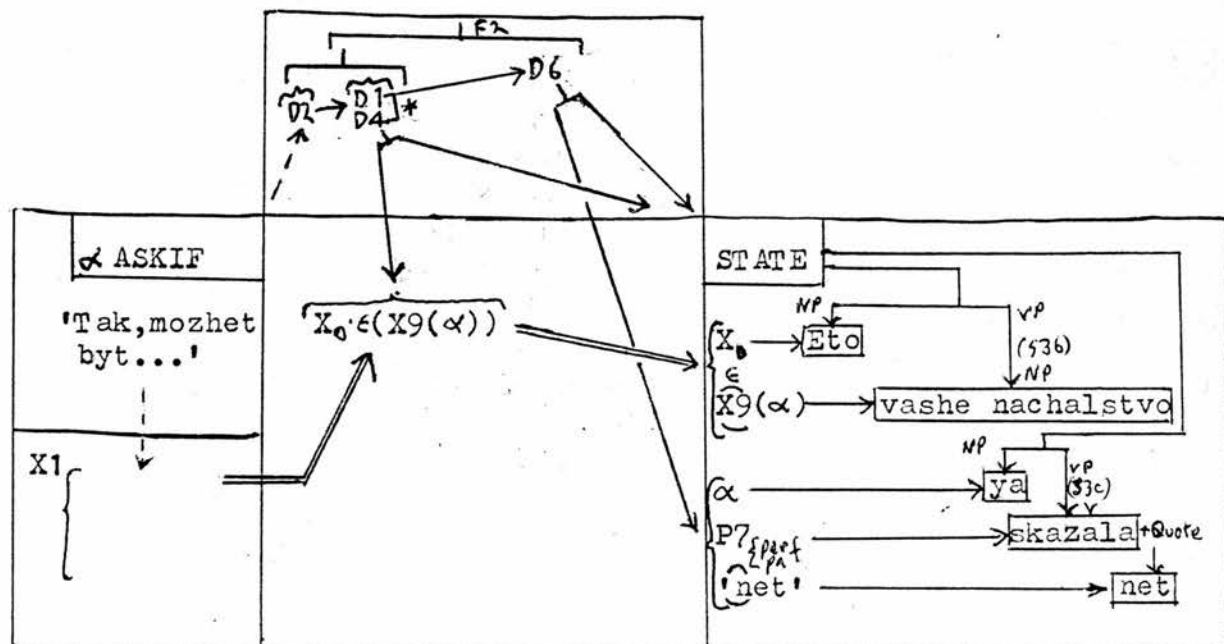


X_0 : Name of α 's immediate superior

('mozhet byt' : perhaps / might be)

D18: Recap

β : Eto vashe nachalstvo - ya skazala 'net'.



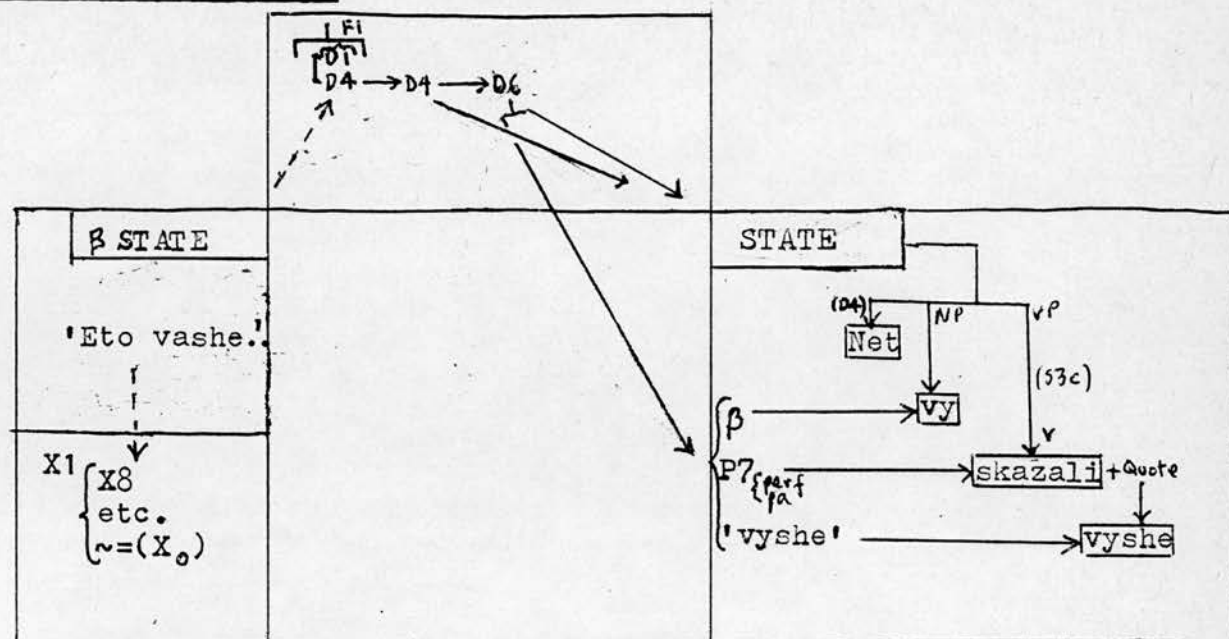
P7: skazat [V] (say) (perfective fem. sing. : - ala) (+ Quote)

-D4: Object

D6: Justify Self

*The objection implies a (negative) answer

α : Net.Vy skazali 'vyshe'.

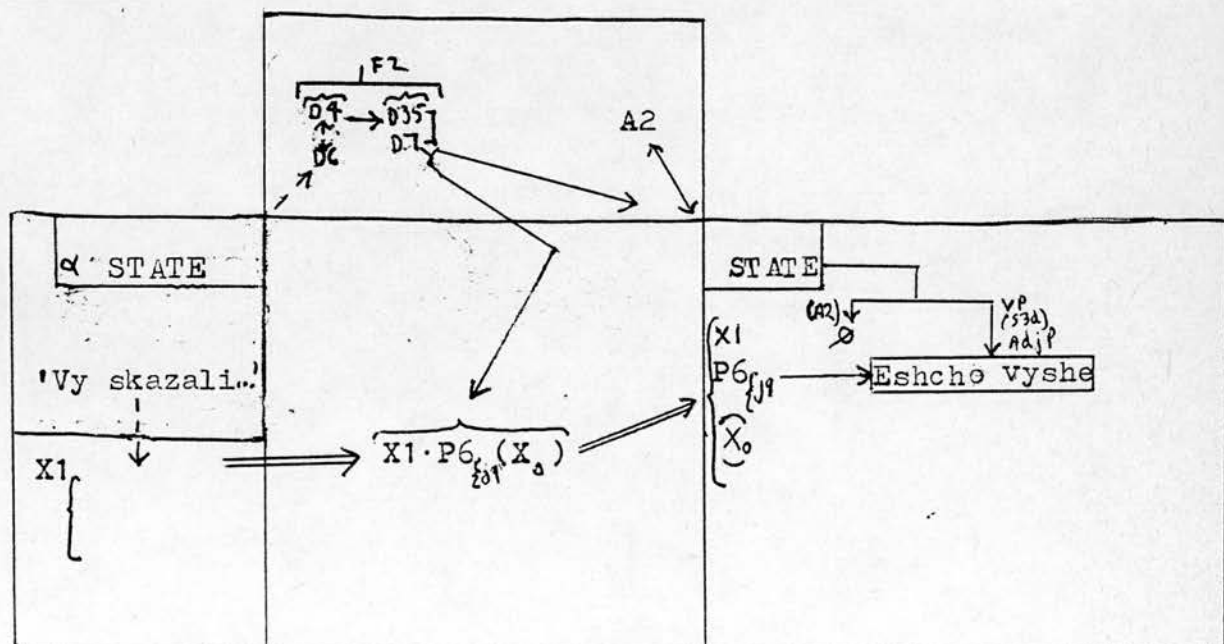


('vy': you)

D6: Justify self

D4: Object

β : Eshcho vyshe.

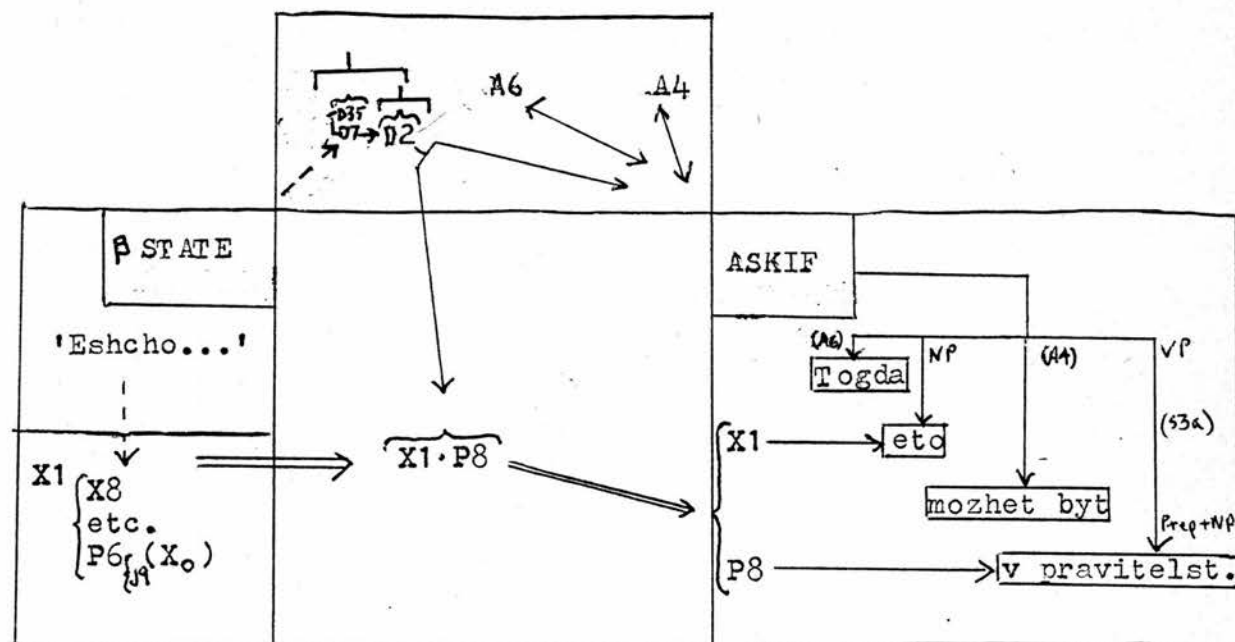


j9: eshcho [Adv] (still)

D7: Rephrase

D35: Prompt

α: Togda eto, mozhet byt, v pravitelstve?

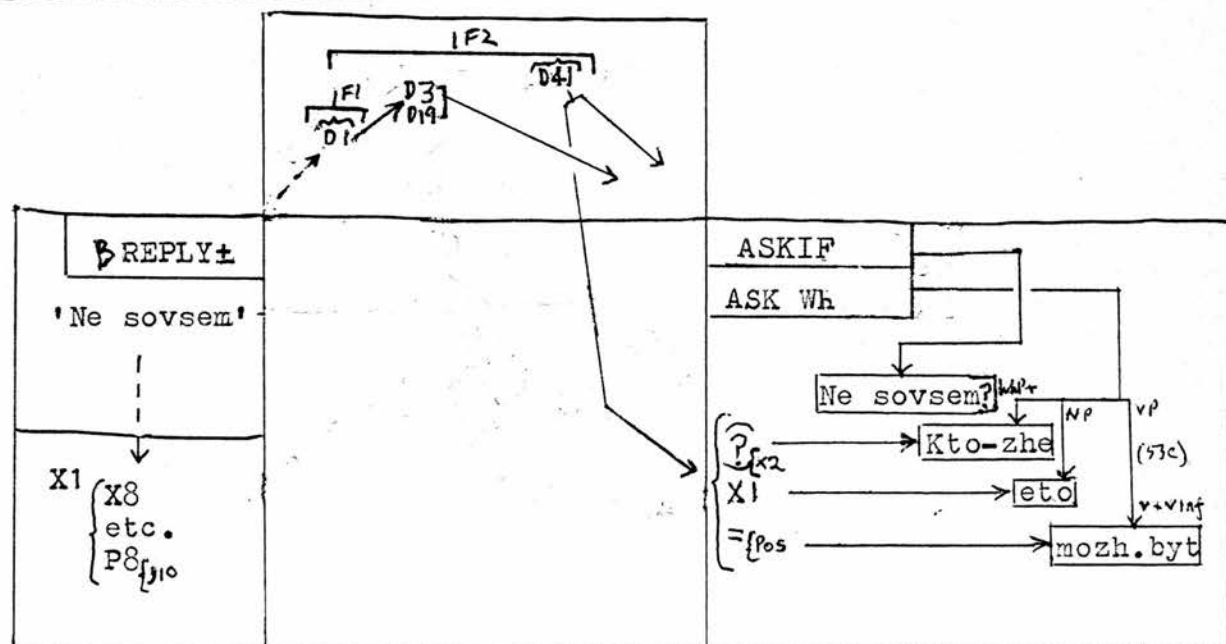


P8: v pravitelstve [Prep](+ loc.) + [N] (in the government)

('togda': then)

(β: Ne sovsem.)

α: Ne sovsem? Kto-zhe eto mozhet byt?



j10 :ne sovsem (not altogether)

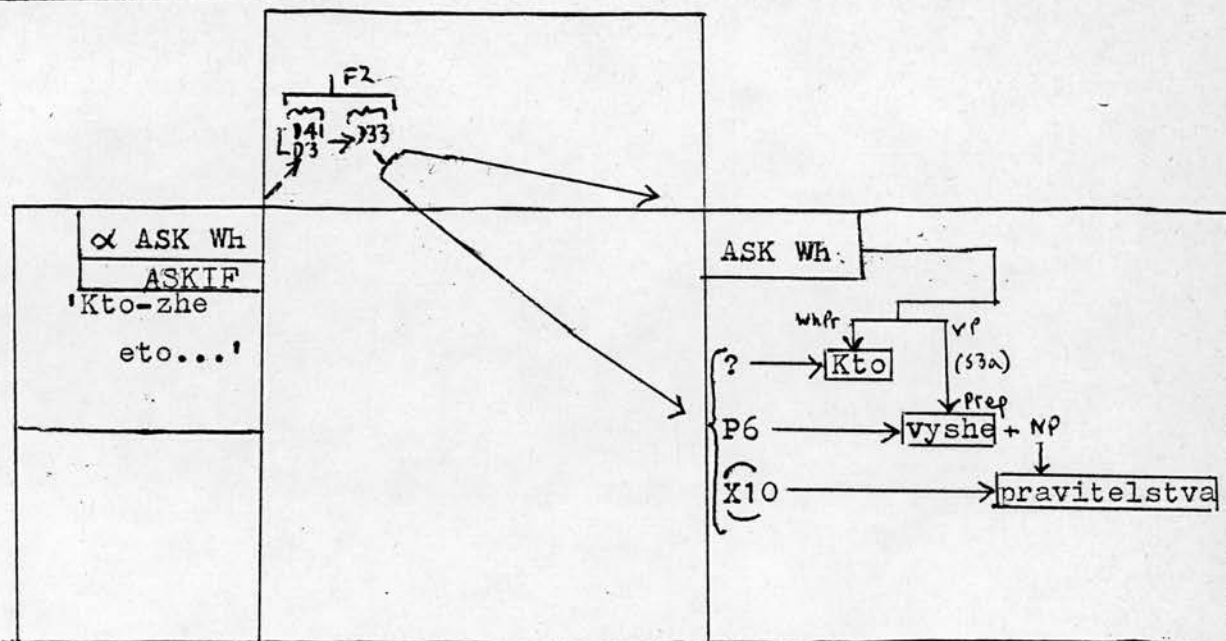
D41: Reason Out Loud

D19: Echo

('kto-zhe': who on earth)

D3 : Express surprise

β : Kto vyshe pravitelstva?

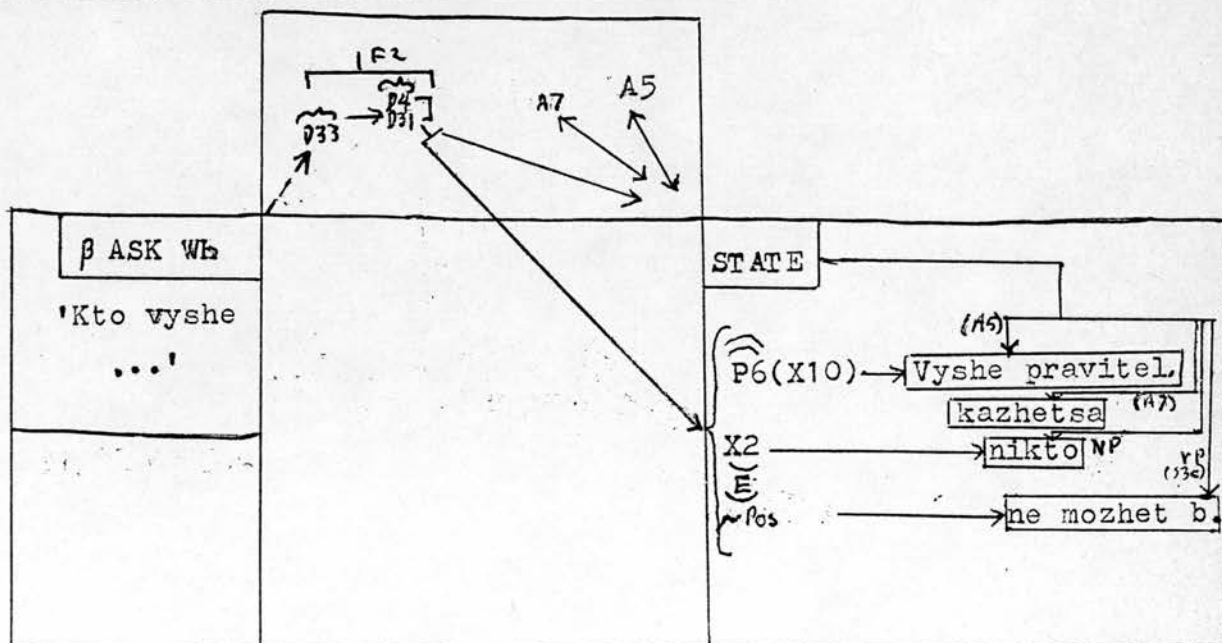


X10: pravitelstvo [N] (neuter sing.) (government - corresp. P8)

D33: Give Help

(α: Vyshe pravitelstva kto mozhet byt?!)

α: Vyshe pravitelstva kazhetsa nikto ne mozhet byt.



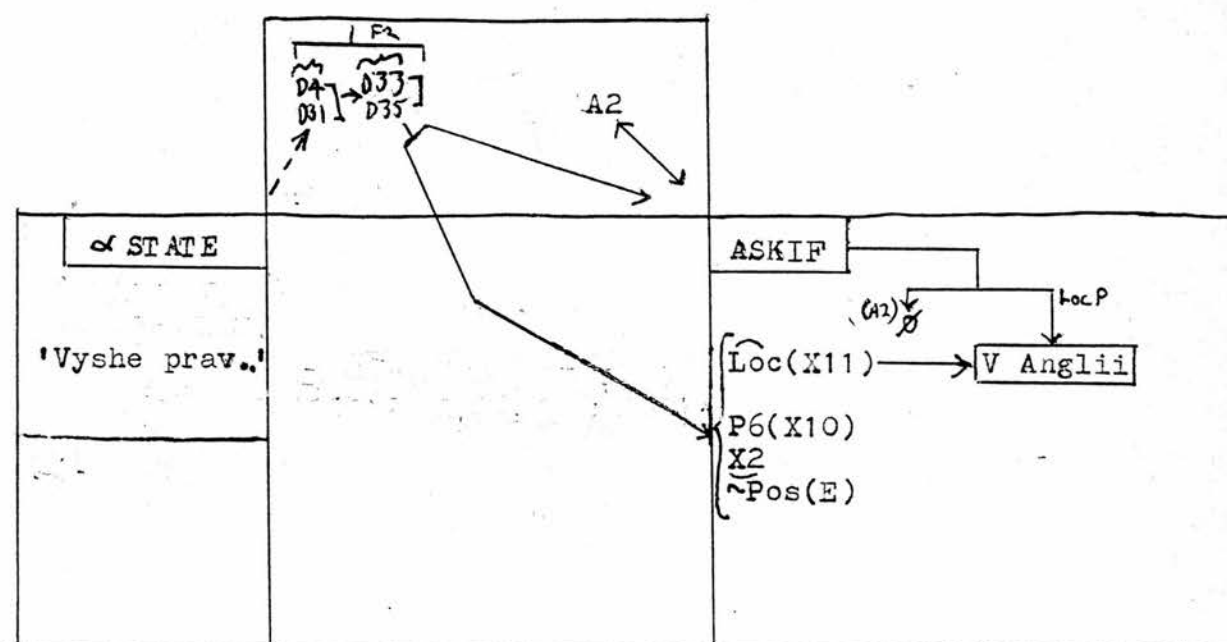
D31: Express Difficulty

D4: Object

('kazhetsa': it would seem)

('nikto': nobody)

β : V Anglii?



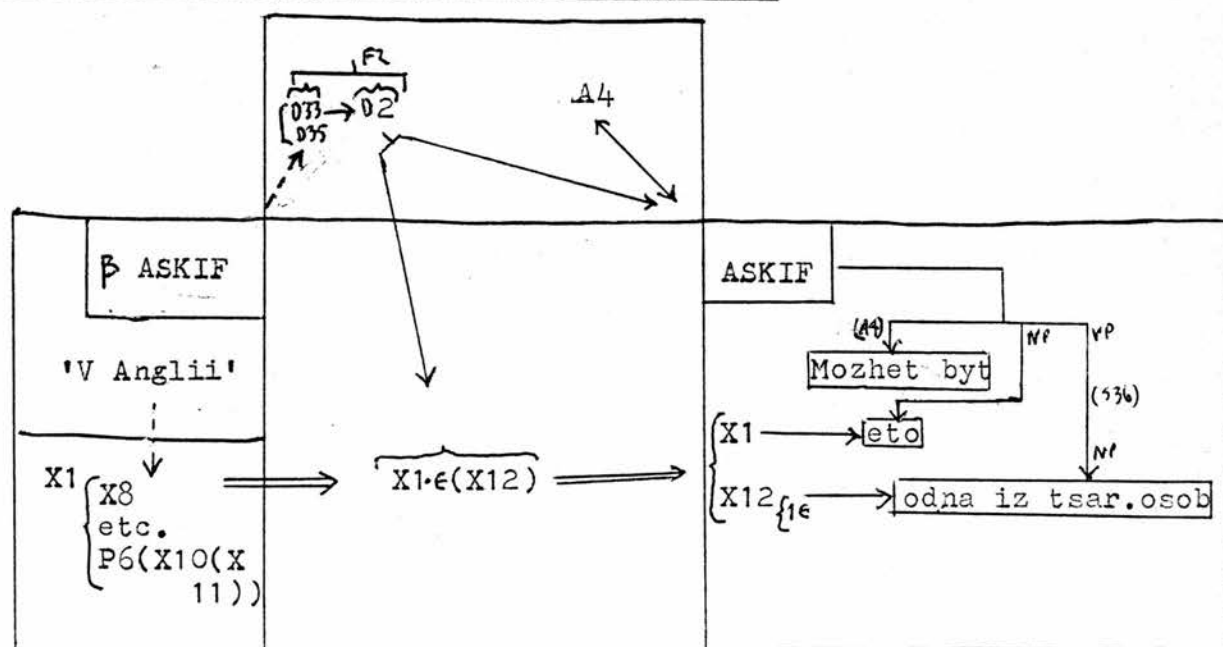
X11: Anglia [N] (England) (loc.case: - ii)

D33: Give Help

D35: Prompt

(α : V Anglii?Vyshe pravitelstva?A!)

α : Mozhet byt eto odna iz tsarstvuyushchich osob?



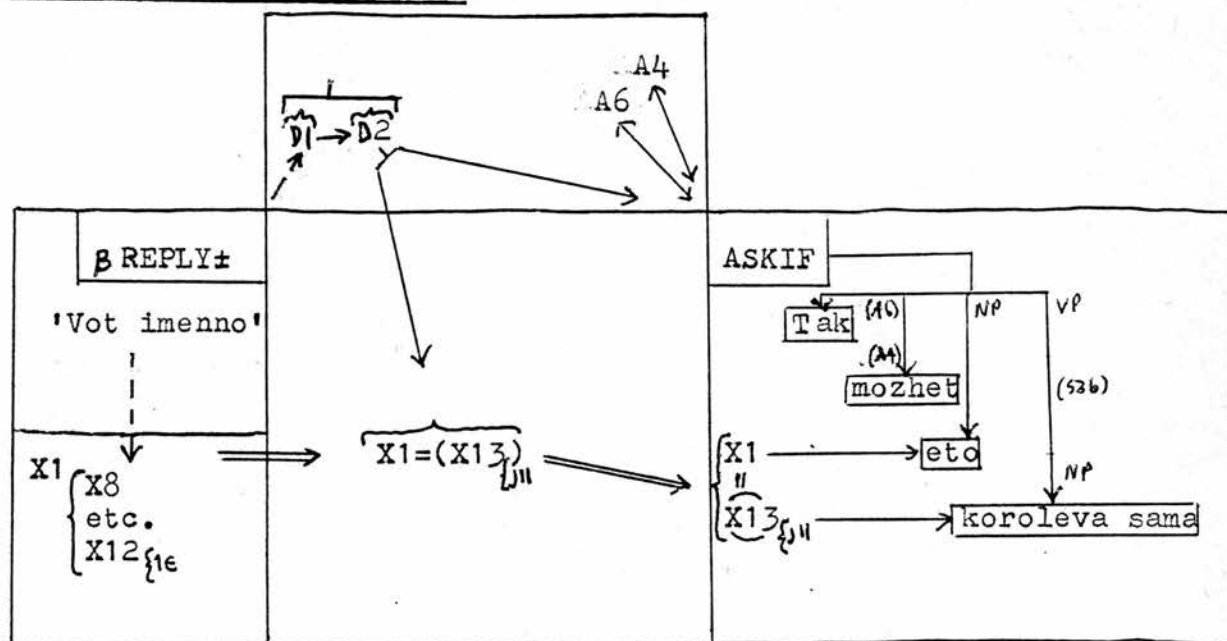
X12: tsarstvuyushchie osoby [Adj] + [N] (fem.pl.) (ruling persons)

(gen.: -ich osob)

('odna': one (fem.sing.))

(β : Vot imenno.)

α : Tak, mozhet, eto koroleva sama?

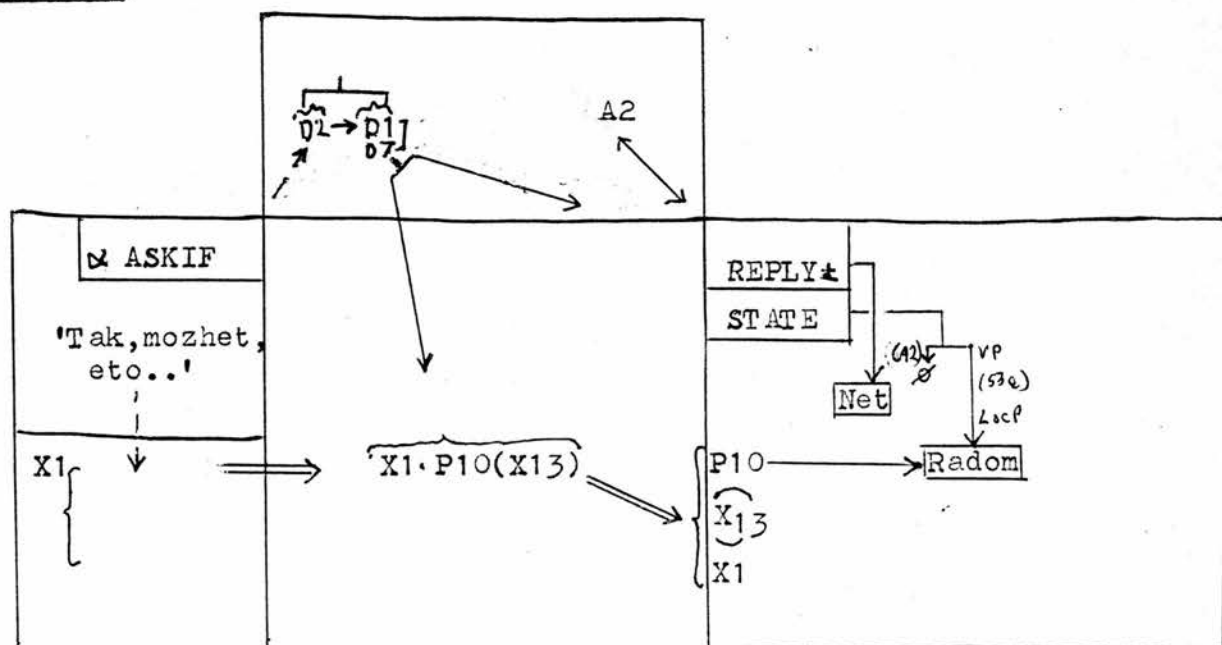


X13: koroleva [N] (the Queen)

j11: sama[Pr](herself)

('mozhet' : 'mozhet byt': perhaps)

β : Net.Radom.

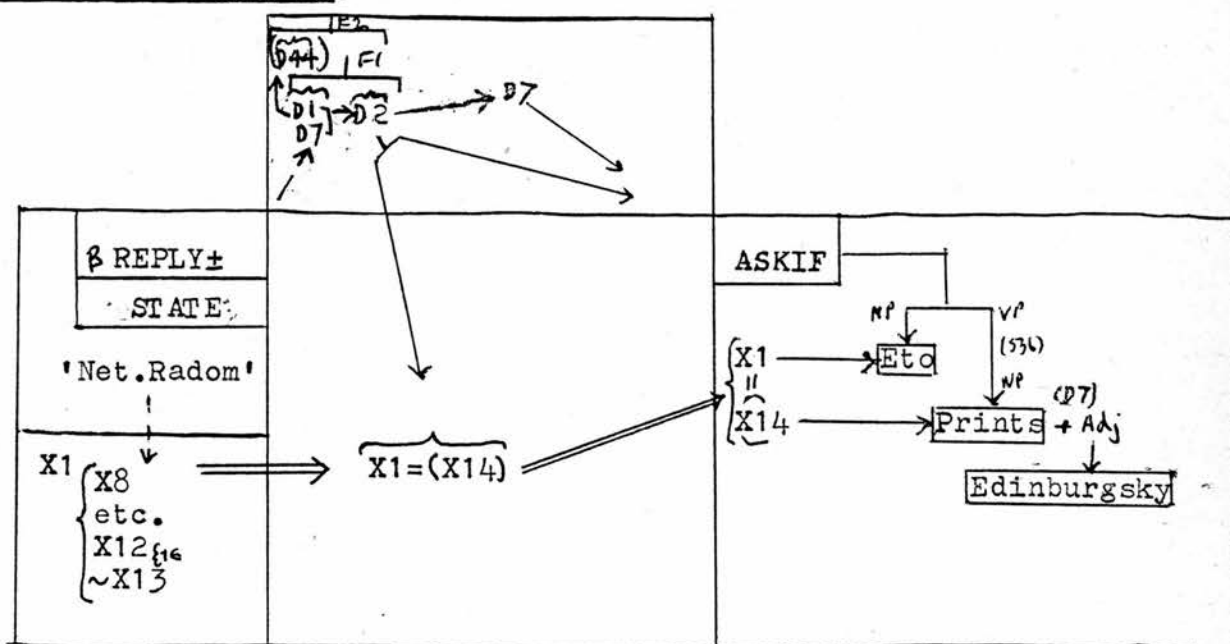


P10: radom [Adv] (next to/beside)

D7: Rephrase/Expand

(α : Radom s ney?)

α : Eto Prints?Edinburgsky?



X14: Prints Edinburgsky [N] + [Adj] (The Duke of Edinburgh)

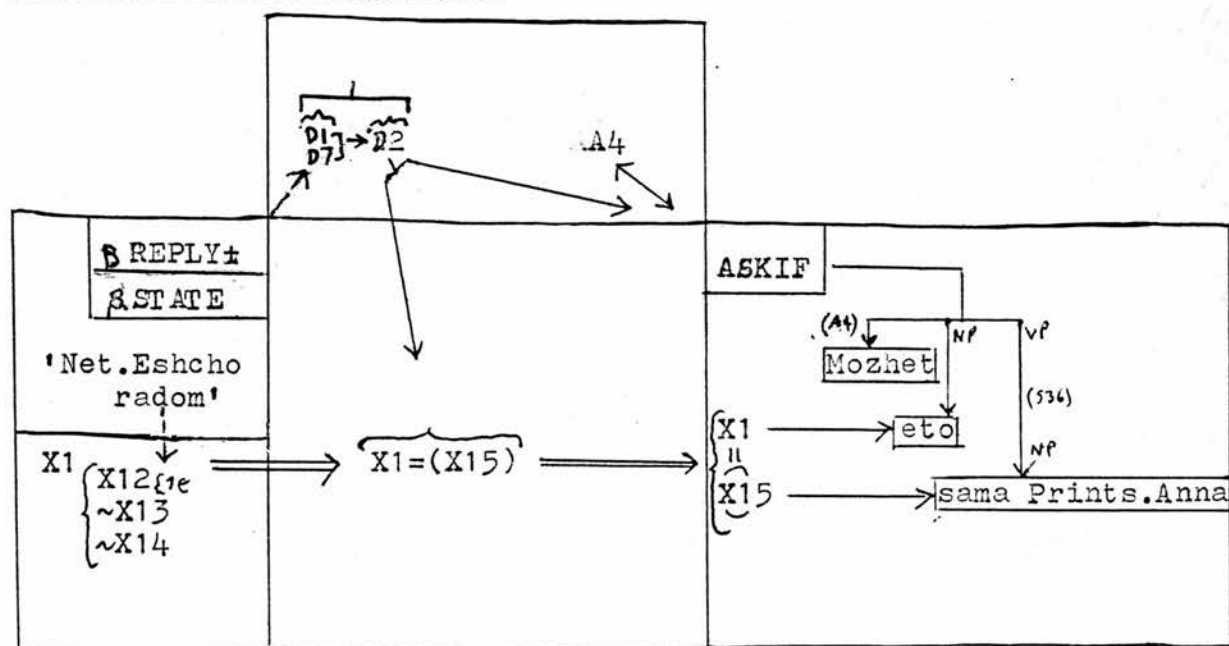
D7: Expand/Rephrase

('radom s ney': next to her)

D44: Req. Confirmation(here rhetorical)

(β : Net.Eshcho radom.)

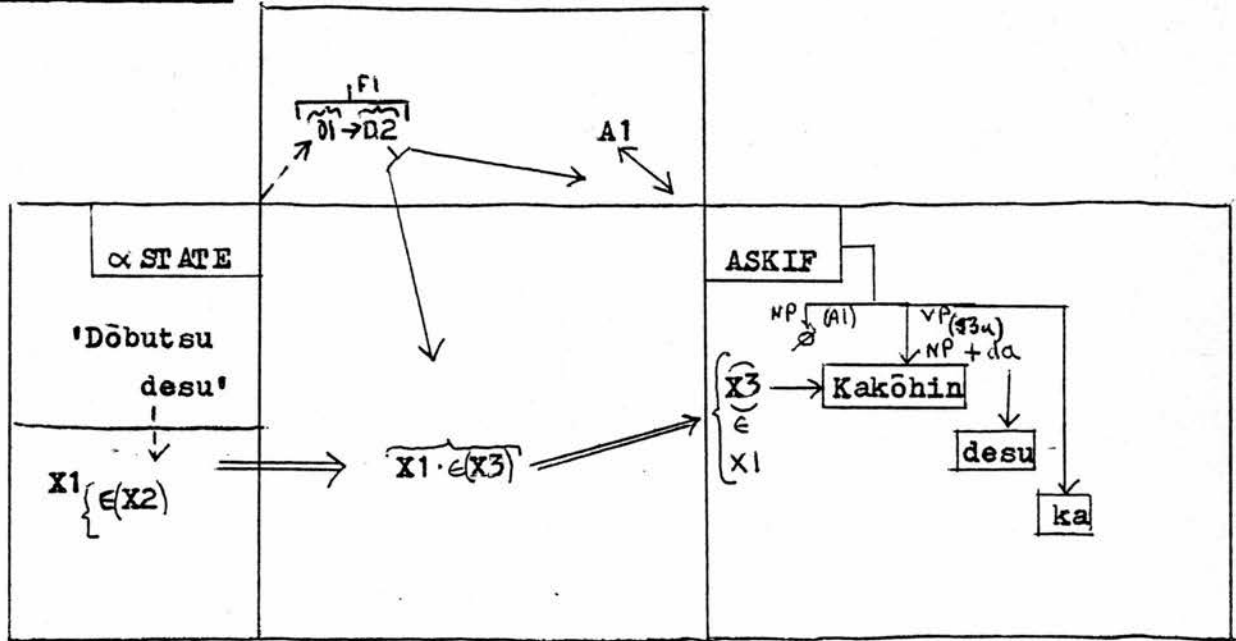
α : Mozhet eto sama Printsessa Anna?



X15: Printsessa Anna [N] + [N] (Princess Anne) D35: Prompt

('Eshcho radom' : still/further next(to her))

(β : Printsessa Anna.)

(α: Dōbutsu desu.)β: Kakōhin desu ka?

X2 : dōbutsu [N] (animal)

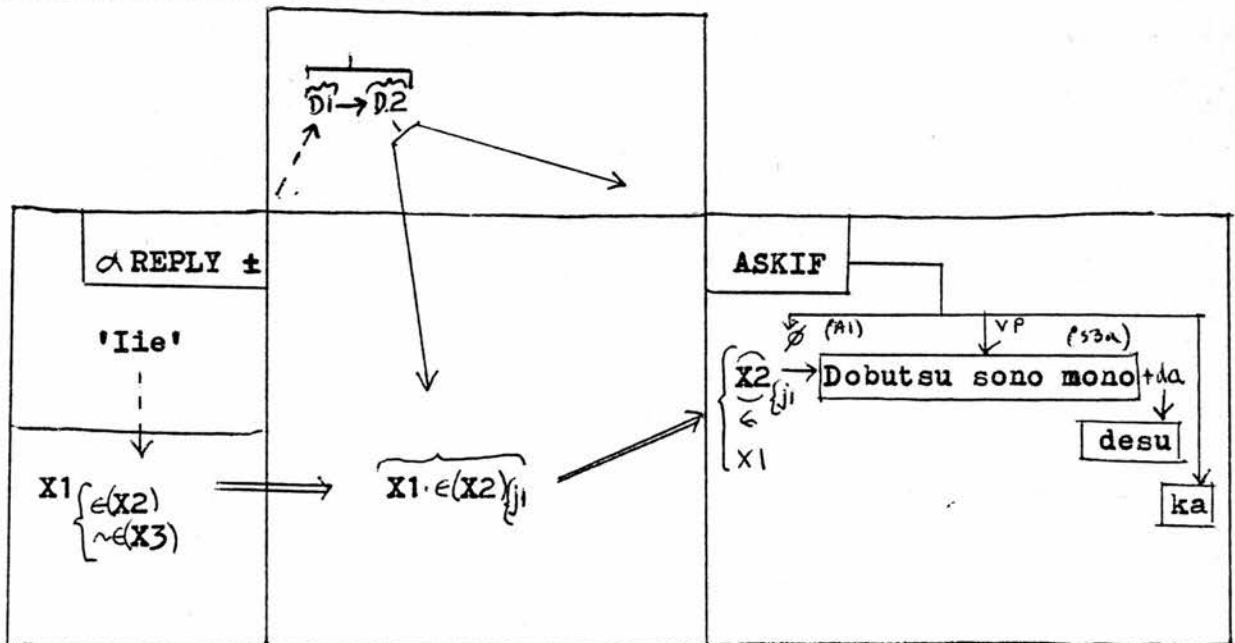
D1: Answer

X3 : kakōhin [N] (manufactured object)

D2: Game Question

('desu' [V]: be (≠/ =); polite form of 'da')

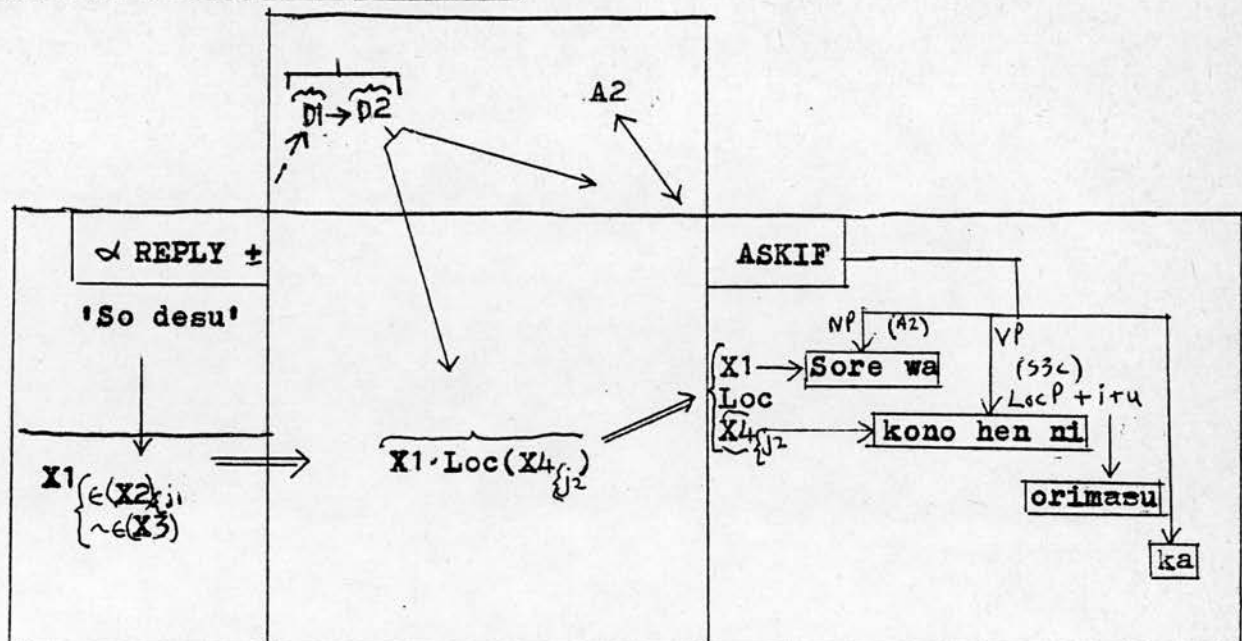
('ka' : question particle)

(α: Iie.)β: Dōbutsu sono mono desu ka?

j1: sono mono ([N] +) [Adj] [Hg] (itself)

(α :Sō desu.)

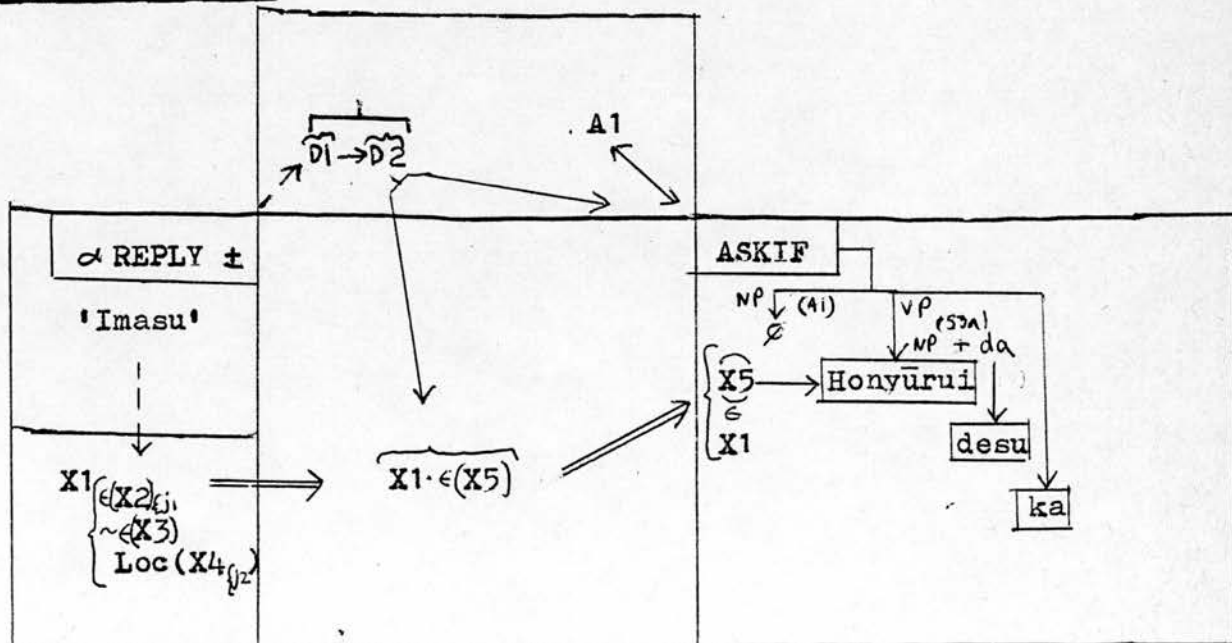
β : Sore wa kono hen ni orimasu ka?



$X4$: hen[N] (vicinity/area) ('sore wa': it(theme))
 $j2$: kono[Dem] (this) ('so' : thus/so)
 ('ni'[PP] : in)
 ('orimasu'[V]:is (loc.);polite alternative to 'imasu')

(α :Imasu.)

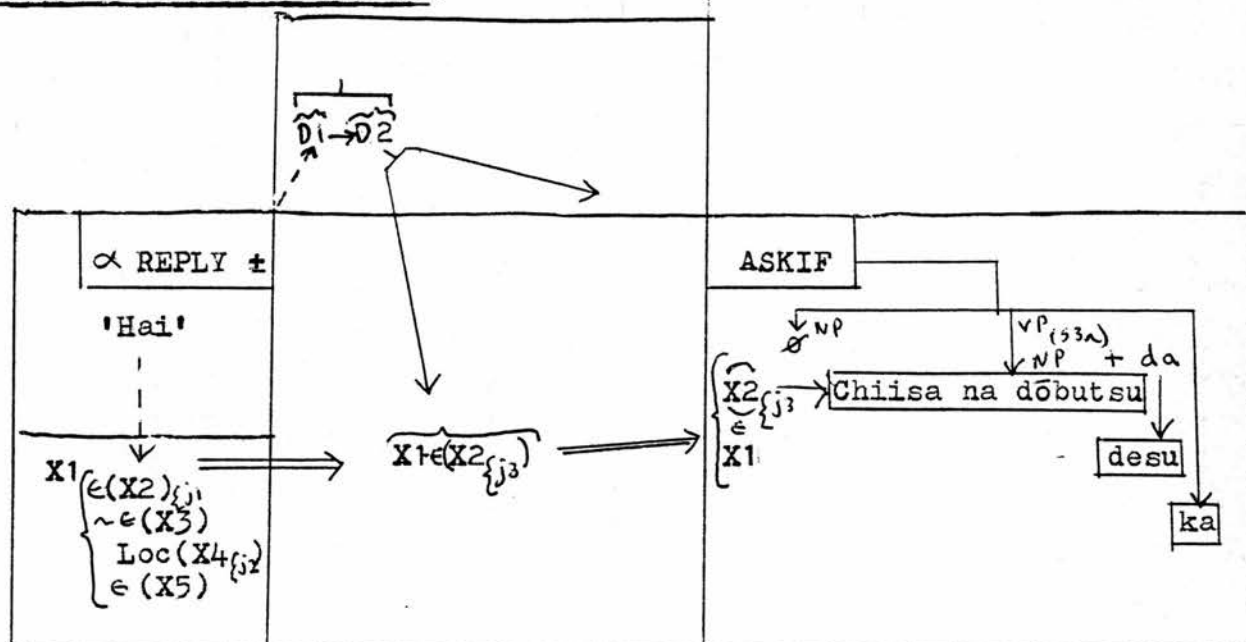
β : Honyūruī desu ka?



$X5$: honyūruī[N] (mammal)
 ('imasu' : be (Loc.,anim.))

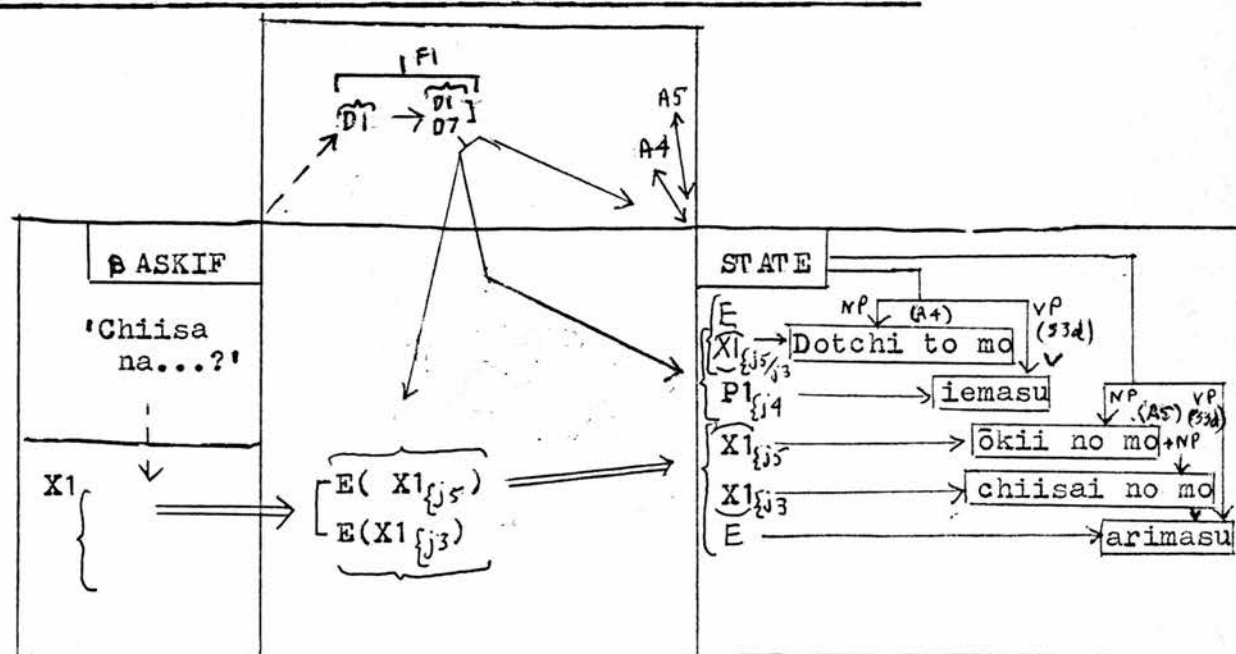
(α :Hai.)

β : Chiisa na dōbutsu desu ka?



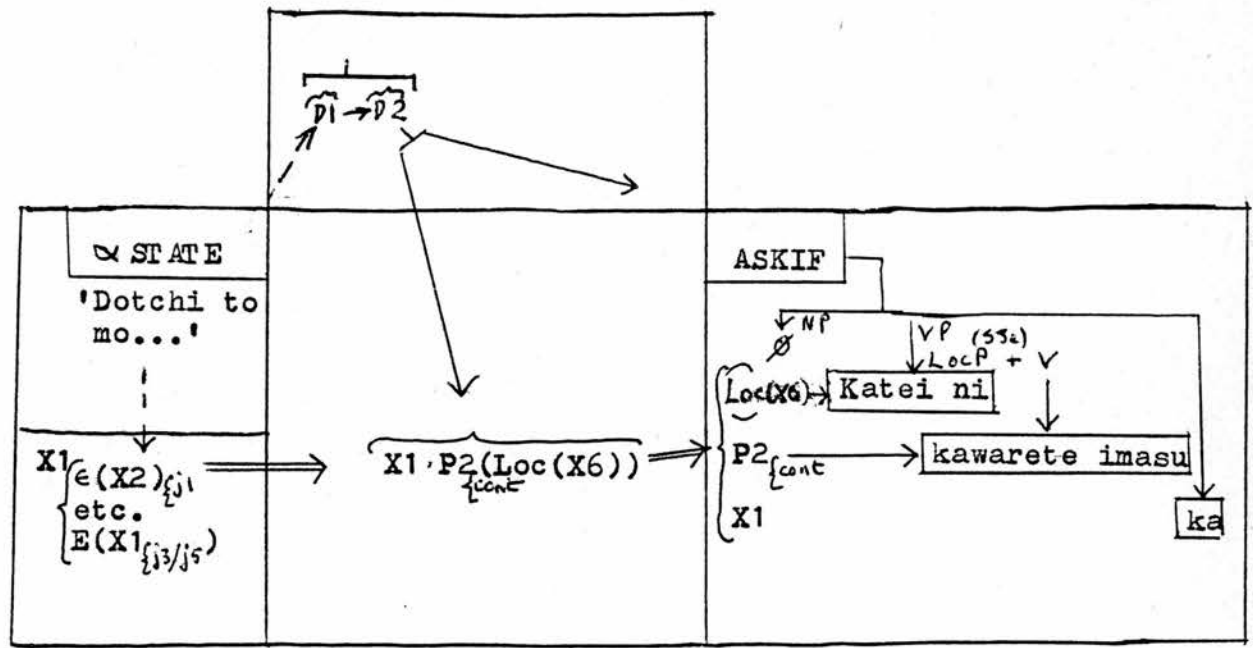
j3: chiisa na/ chiisai [Adj] (small)

α : Dotchi to mo iemasu: ōkii no mo chiisai no mo arimasu.



P1: iu [V] (say); (iemasu: polite potential form) j4: {Pos
 (mo...mo: both) ('dotchi to mo': either) ('arimasu' [V]: be(E))
 j5: ōkii [Adj] (big); (+ 'no': big one(s)) D7: Rephrase

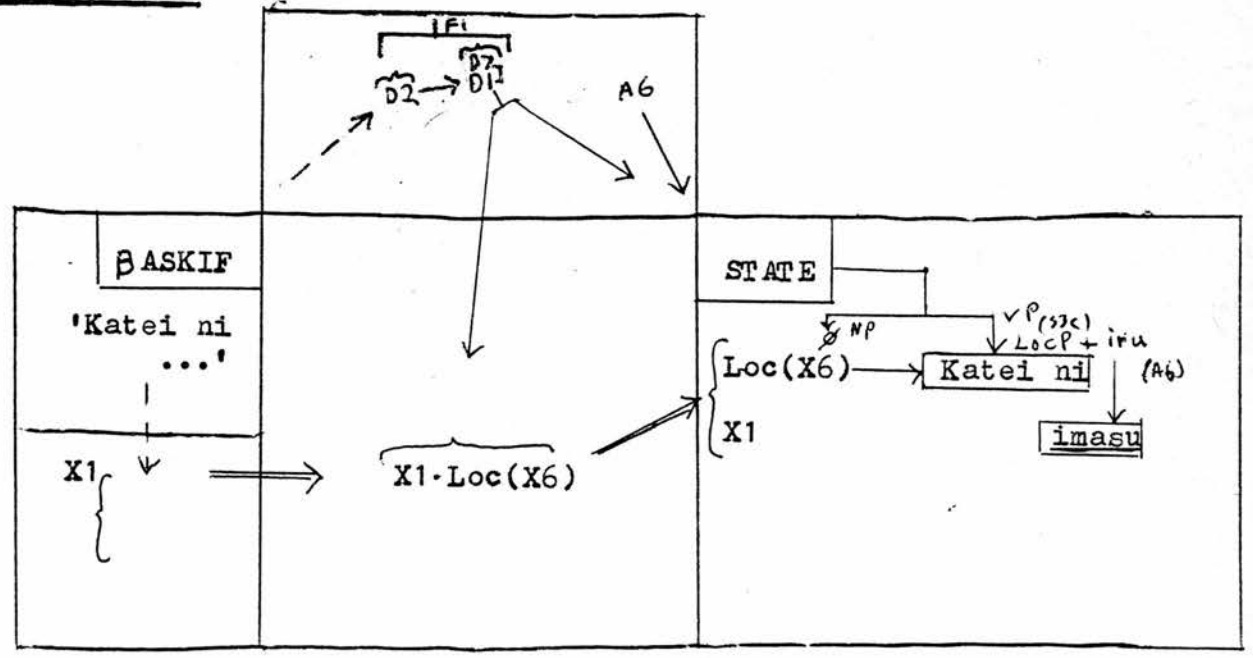
β : Katei ni kawarete imasu ka?



$X6$: katei [N] (house(hold))

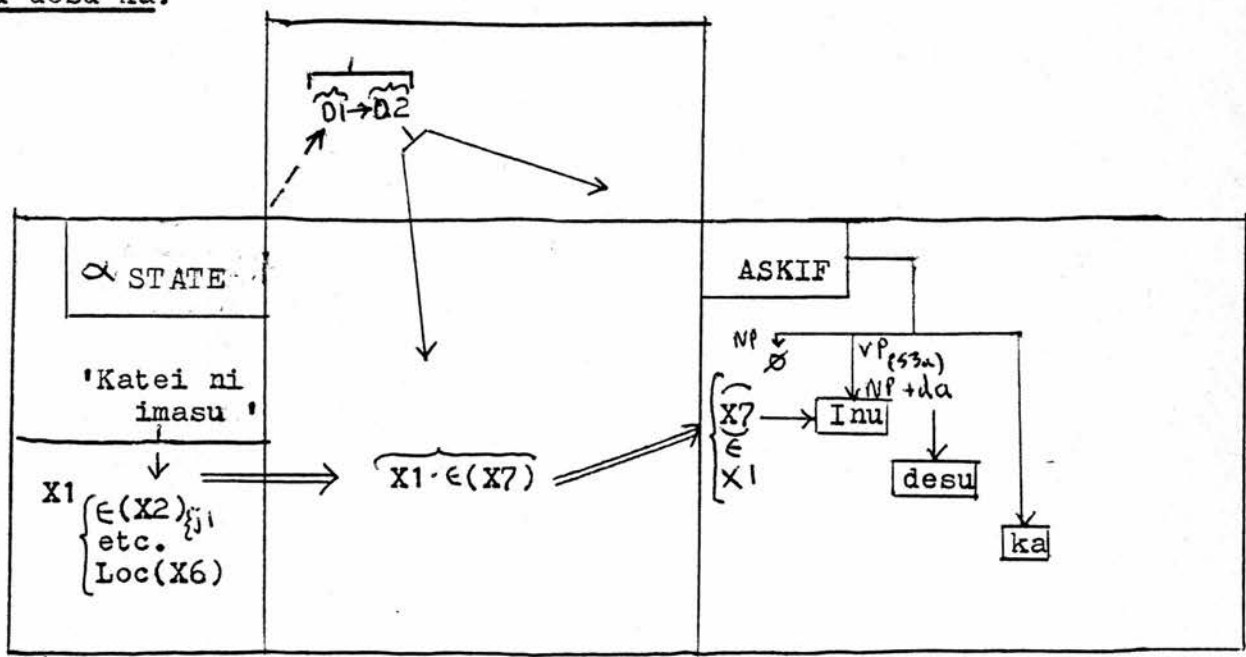
$P2$: kawareru [VPass] (be kept) ('kawarete imasu': pres. cont. tens

α : Katei ni imasu .



D7: Rephrase

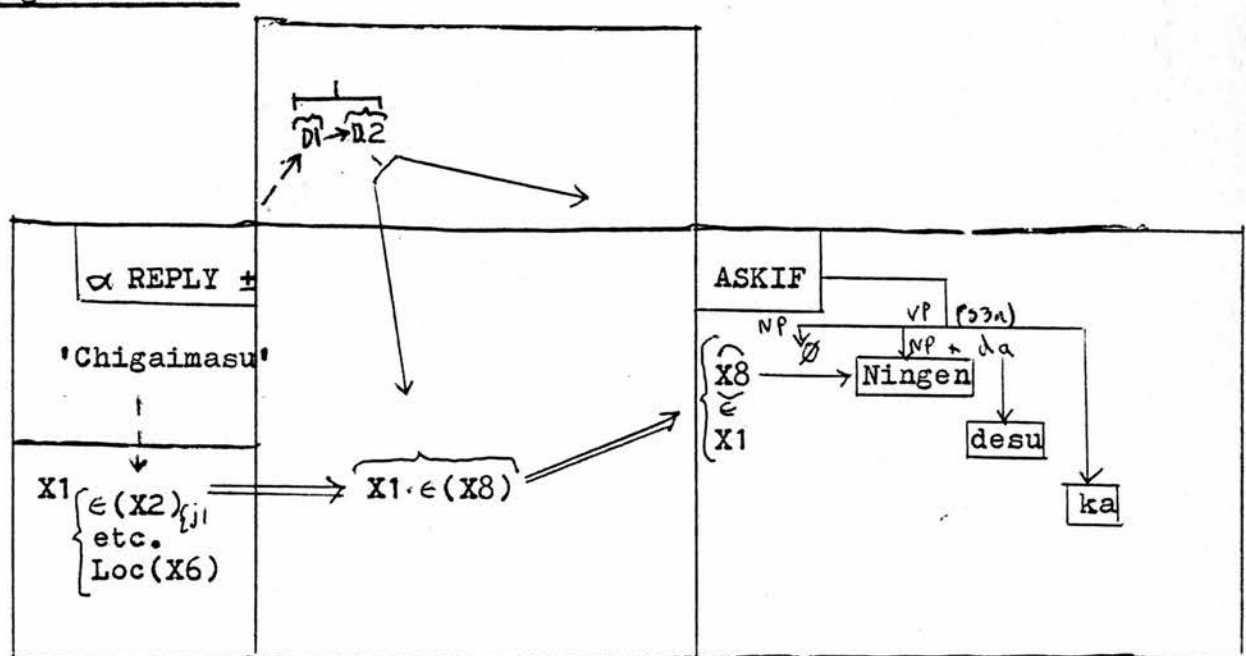
β : Inu desu ka?



$X7$: inu [N] (dog)

(α : Chigaimasu.)

β : Ningen desu ka?

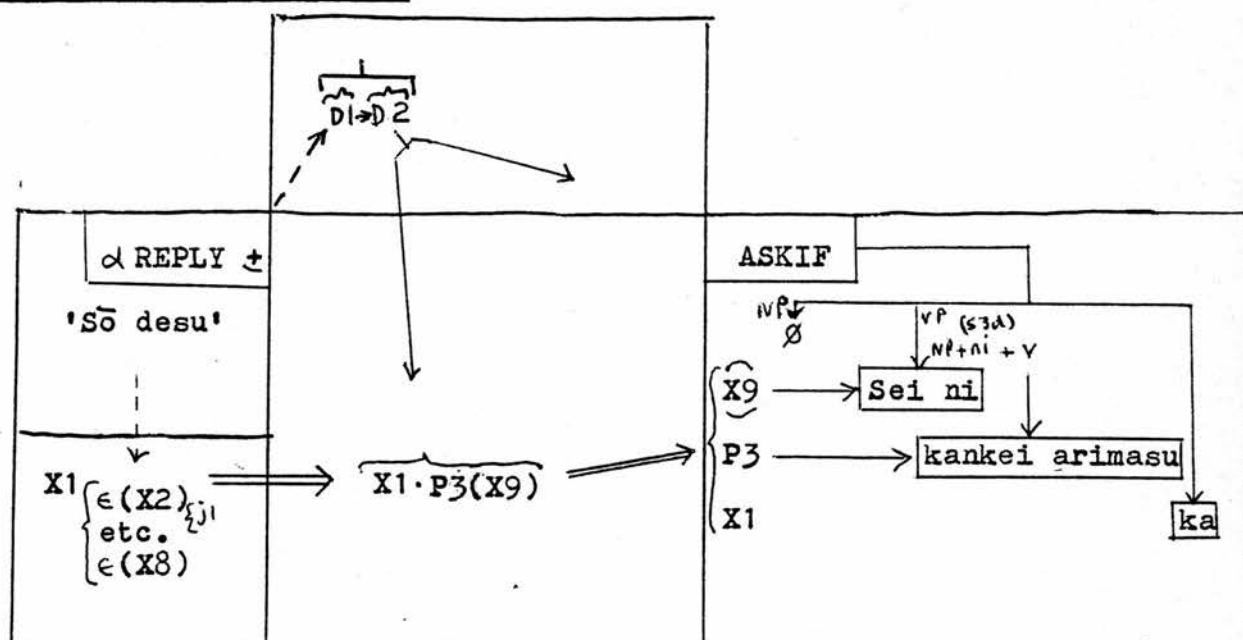


$X8$: ningen [N] (human being)

('chigaimasu': no(polite);lit.: it is otherwise)

(α : Sō desu.)

β : Sei ni kankei arimasu ka?

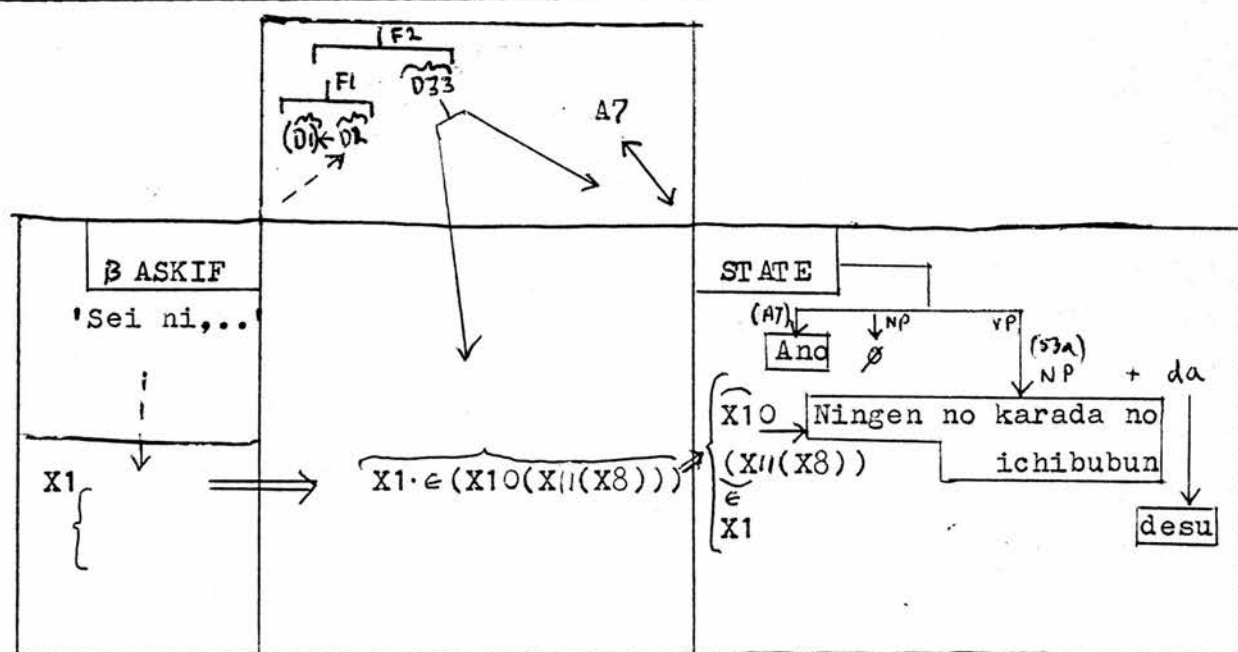


$X9$: sei[N] (Sex)

$P3$: ($[NP] + \underline{ni} +$) kankei aru [V(Comp)] (be something to do with)

(α : Arimasen.)

α : Ano - ningen no karada no ichibubun desu.

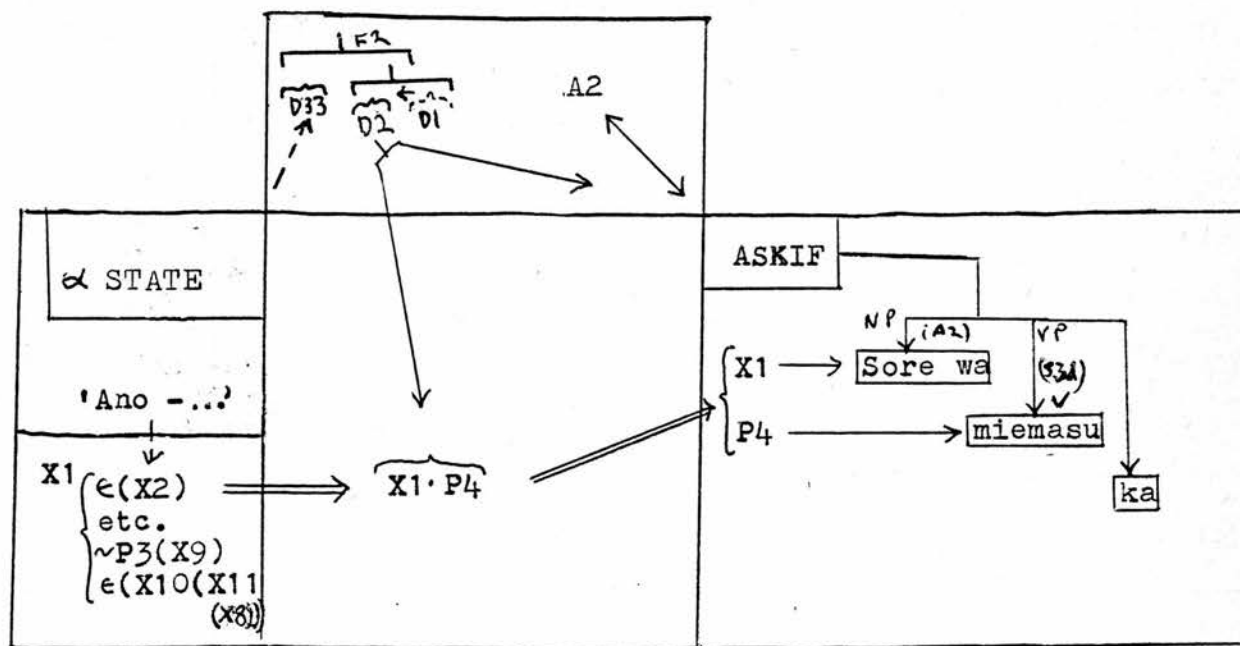


$X10$: ichibubun[N] (one part) ('ano': well...)

$X11$: karada[N] (body) ('no': 's (possessive particle))

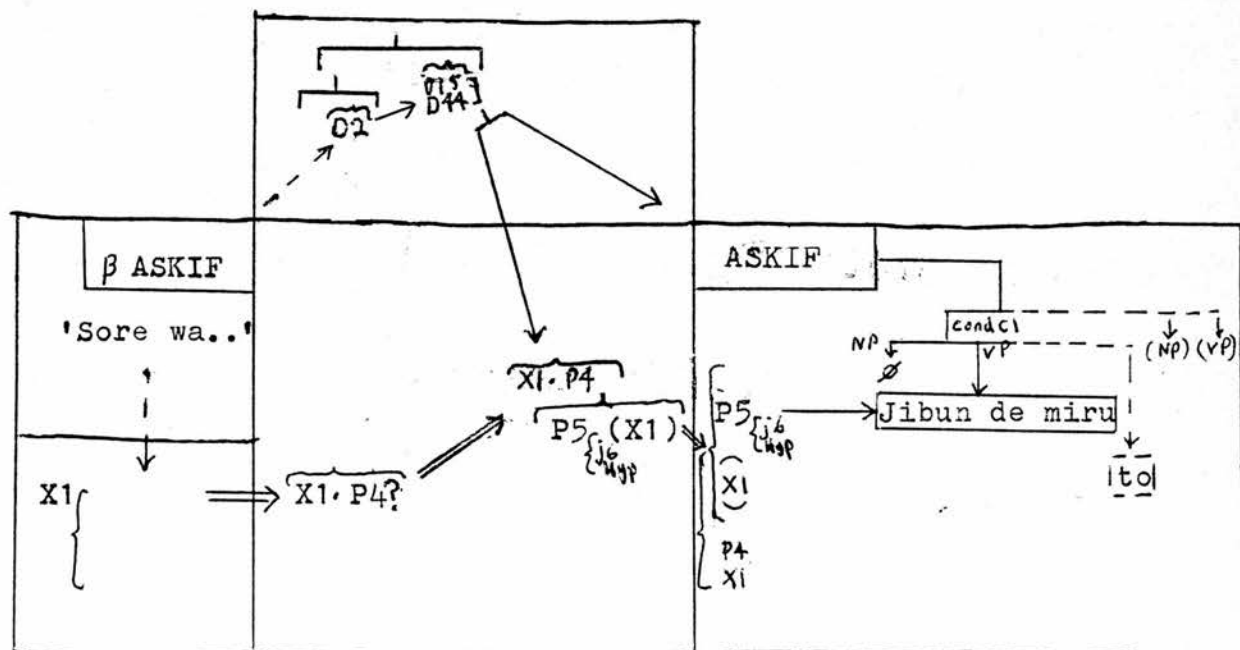
$D33$: Give Help

β : Sore wa miemasu ka?



P_4 : miru [VPass/VPot] (be seen/be visible)

α : Jibun de miru - ?



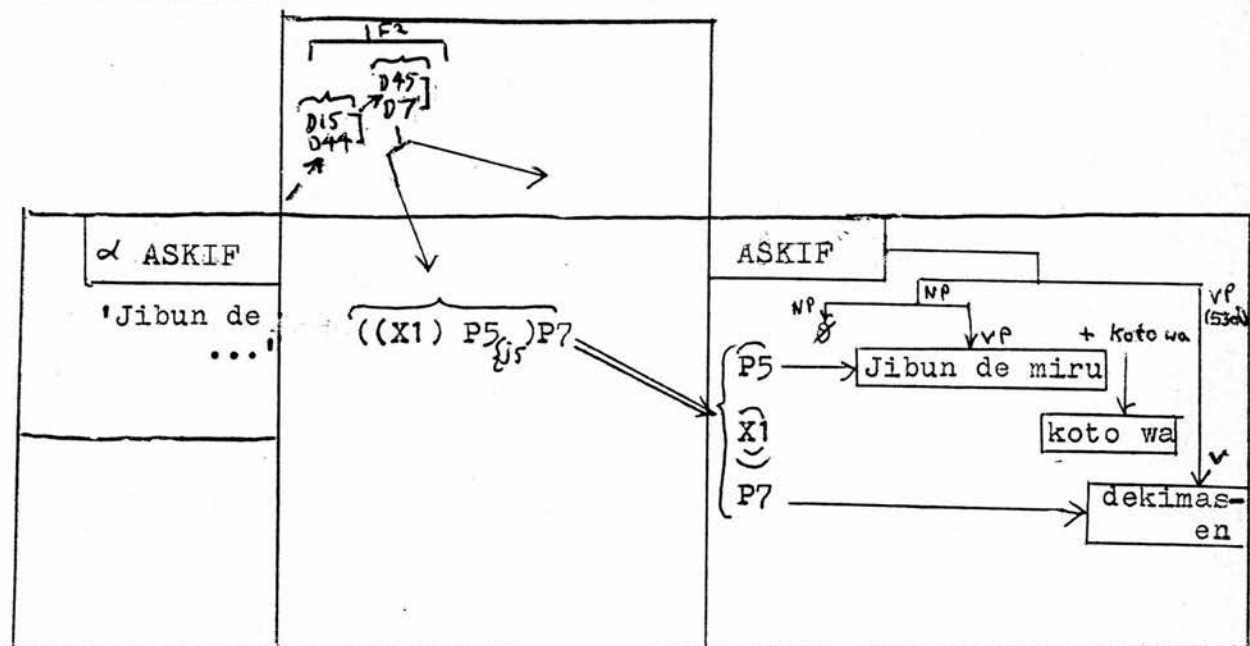
D_{44} : Req. Confirmation

P_5 : miru [V] (see, look)

D_{15} : Req. Rephrase

j_6 : jibun de [Adv] (oneself)

β : -koto wa dekimasen?

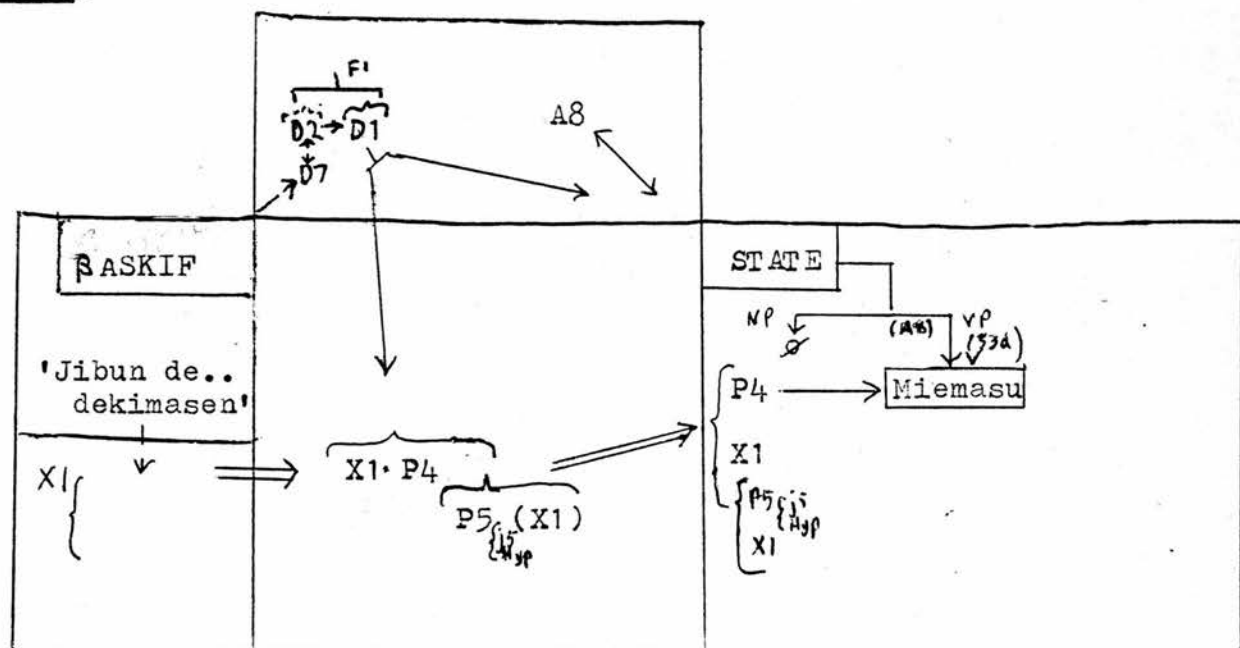


P7 : ([VP] + koto [N] + wa [Part]) dekiru [V] (be possible) ('dekimasen': neg
('koto' : thing (abstract))

D45: Complete X's utterance

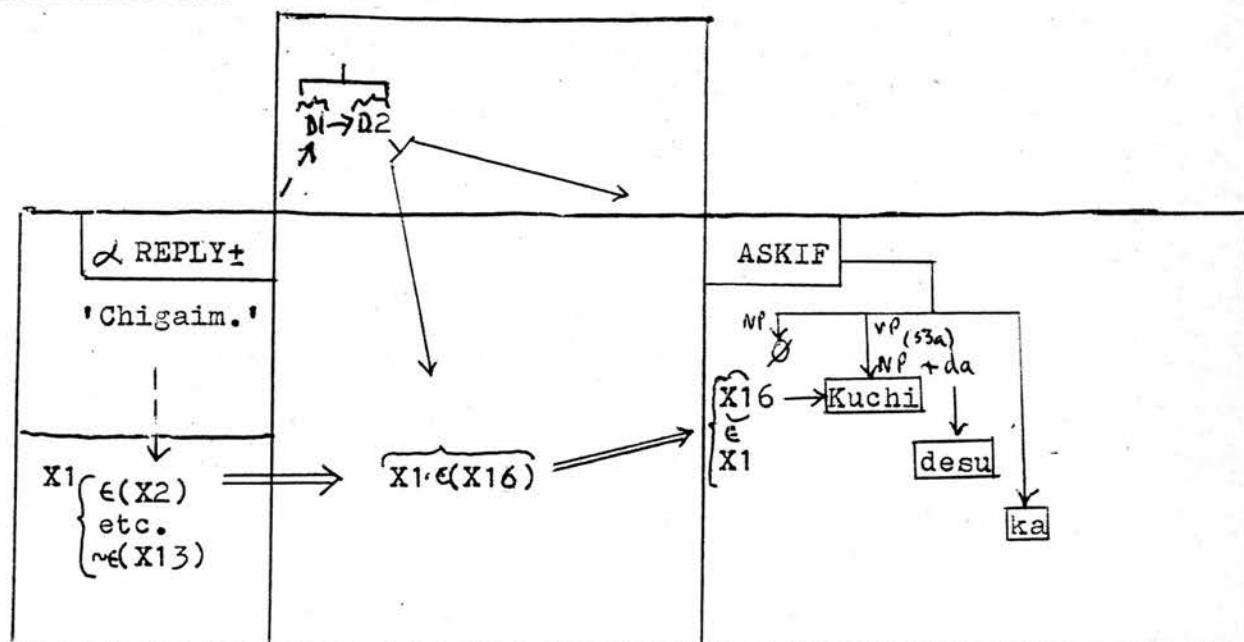
D7: Rephrase

α : Miemasu.



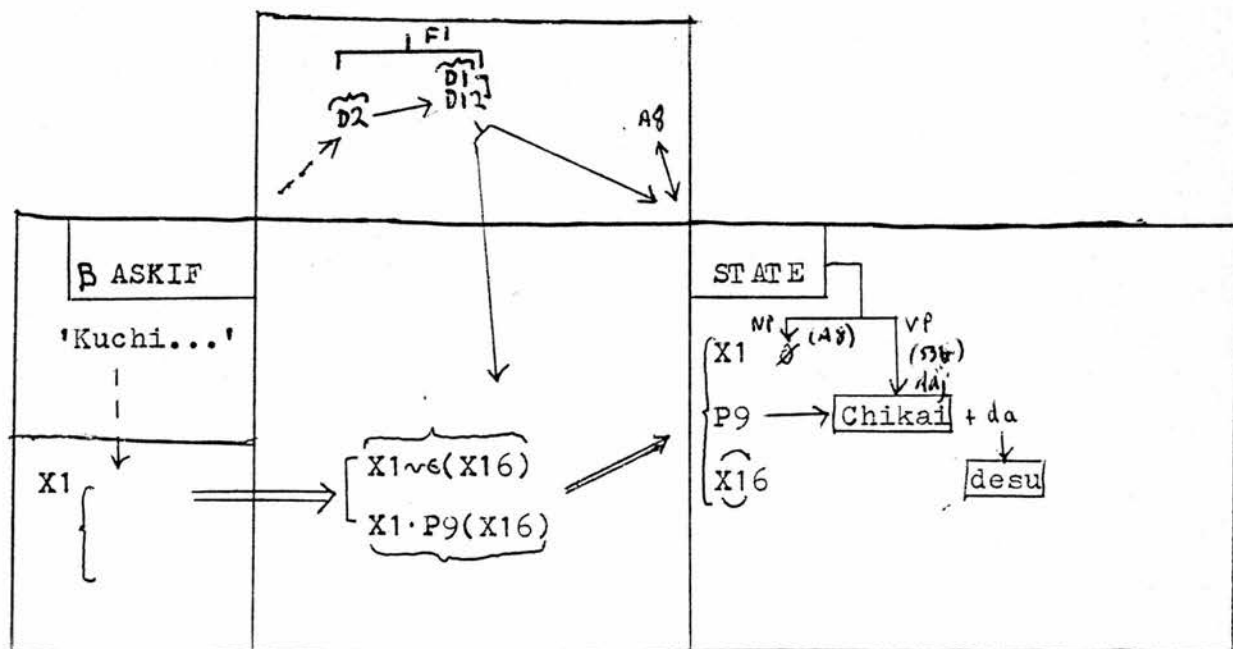
(α : Chigaimasu.)

β : Kuchi desu ka?



$X16$: kuchi[N] (mouth)

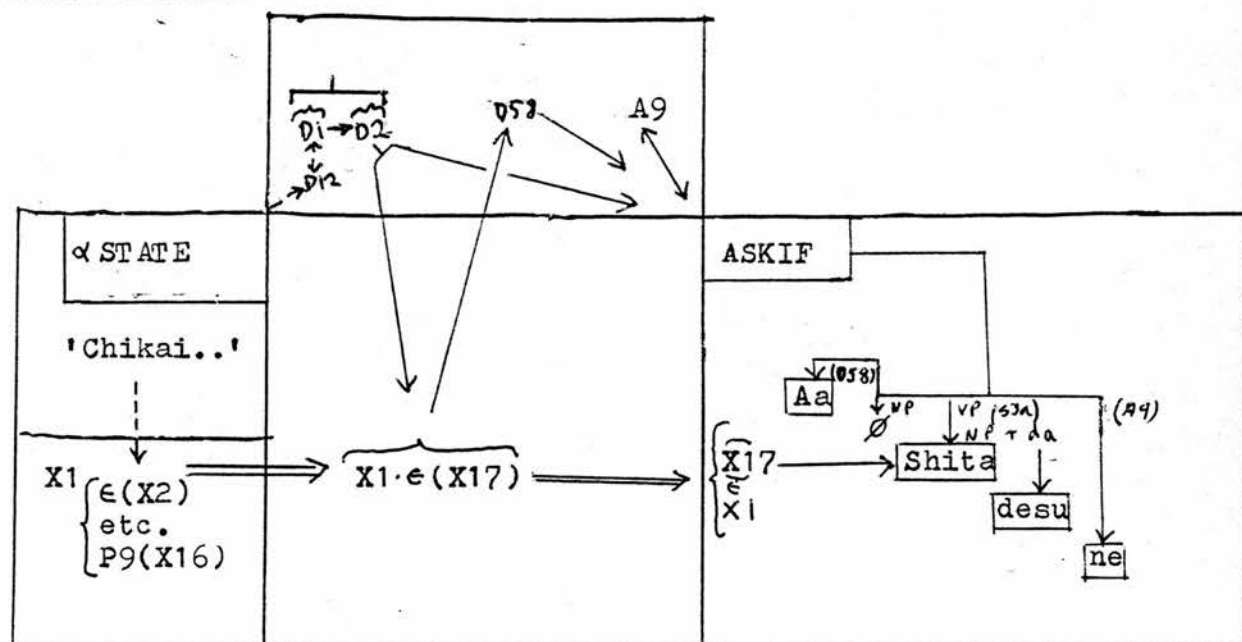
α : Chikai desu.



$P9$: chikai[Adj] (close/near)

$D12$: Comment (here implying the answer to β 's last question)

β : Aa.Shita desu ne?



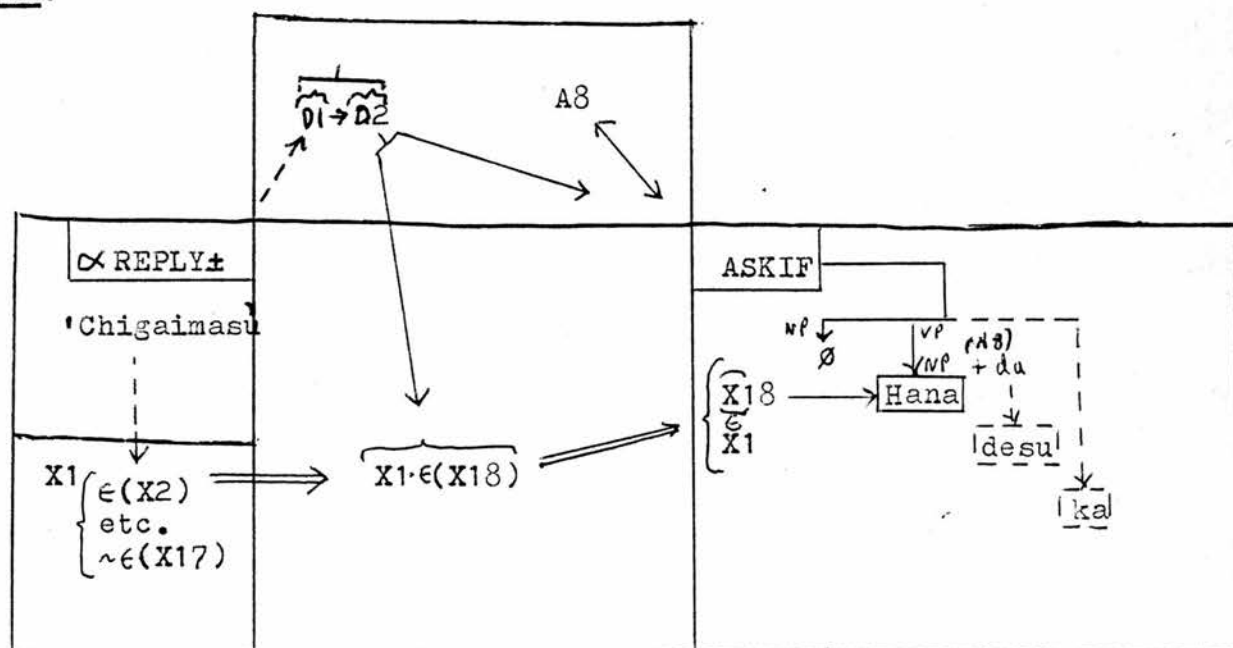
$X17$: shita[N] (tongue)

('ne': isn't it?; expressive particle)

$D58$: Express pleasure(here at thinking game is now solved)

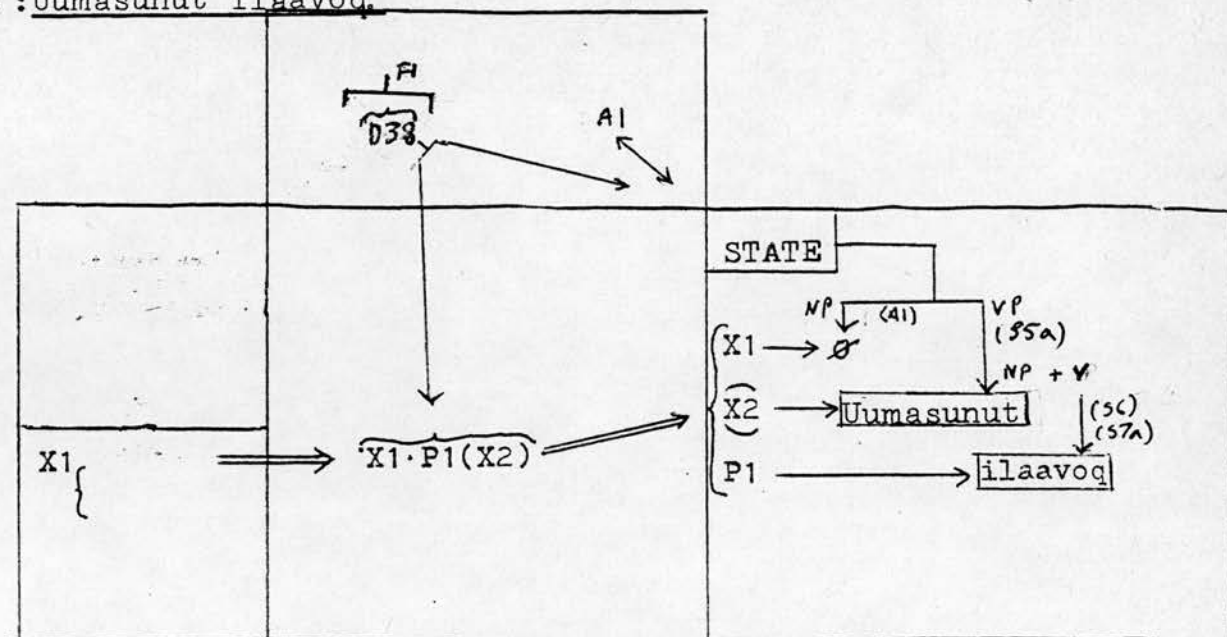
(α : Chigaimasu.)

β : Hana!



$X18$: hana[N] (nose)

Game 10(Eskimo)*

 α : Uumasunut ilaavoq.

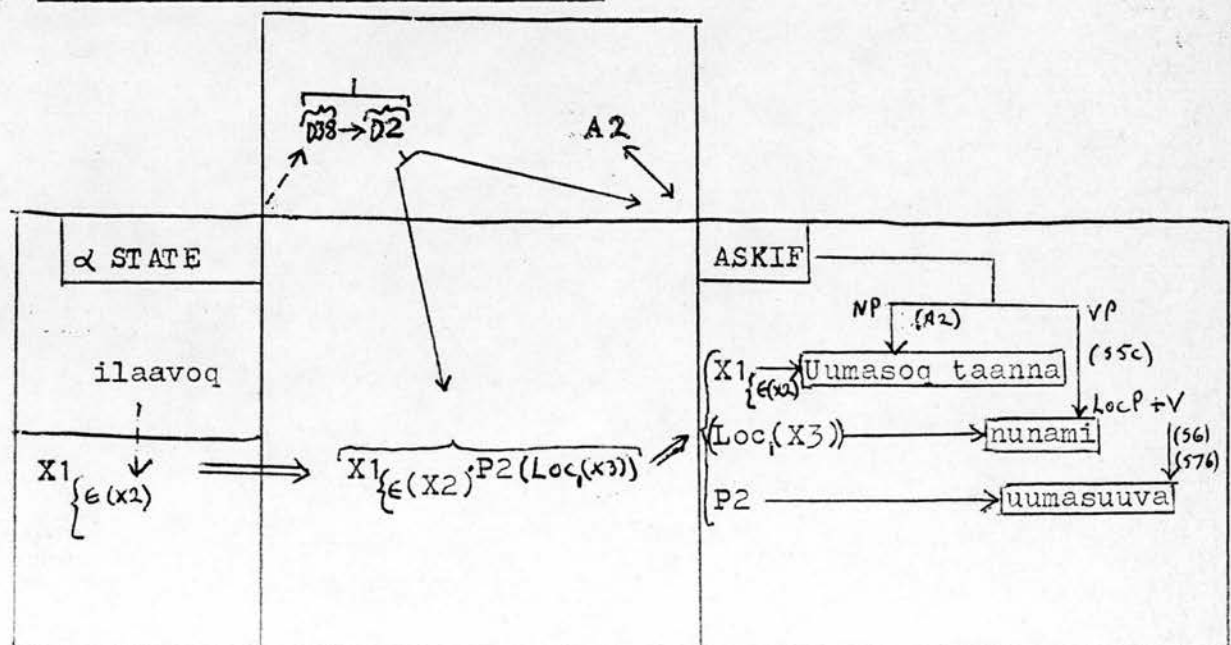
P1: ilaa- ($[N]_{\text{all}} + [V]_{\text{intr}}$) (be a part/member of; here synonymous with '-u-': be/e)

X2: uumasooq $[N]$ (animal) (-nut: allative plural)

(N.B. Morphophonemic processes - assimilation, etc. - not in general indicated)

D38: Announce

*New orthography

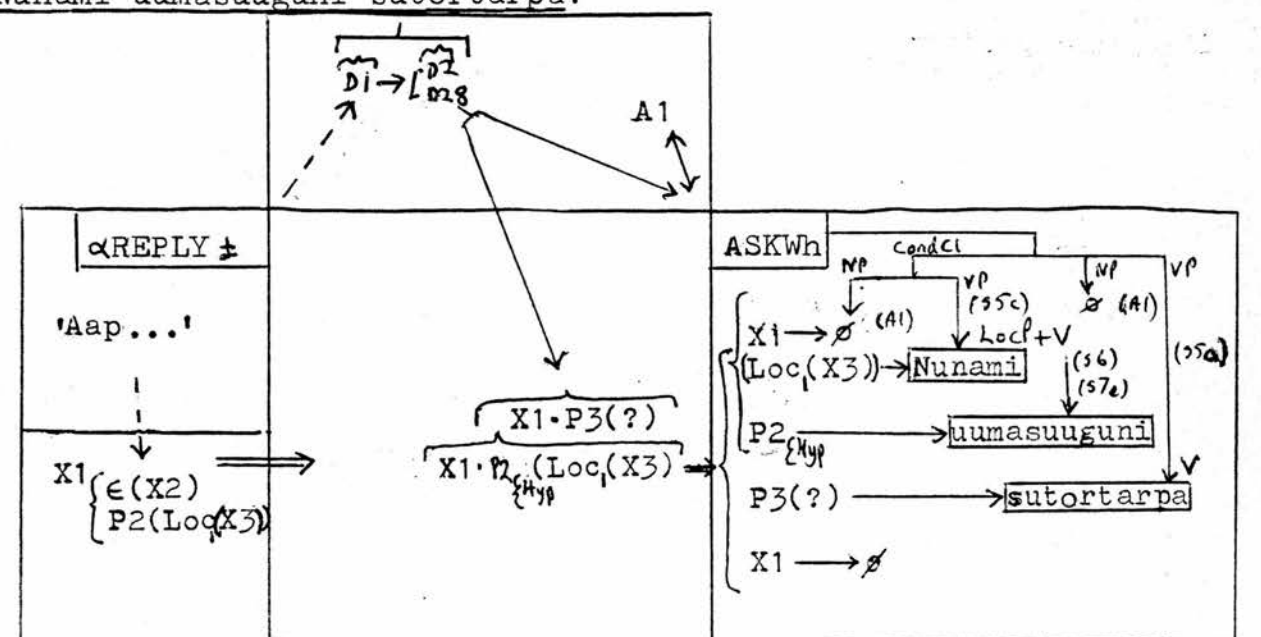
 β : Uumasooq taanna nunami uumasuuva?

X3: nuna $[N]$ (land) ('taanna': this(just mentioned) $[Pr]$)

P2: uumasuu- $[V]_{\text{intr}}$ (live) (i.e. X2 + -u- $[V_s]$) (Loc_i: -mi/-ni $\{_{loc}$)

α : Aap.Nunami uumasuuvoq.

β : Nunami uumasuguni sutortarpa?



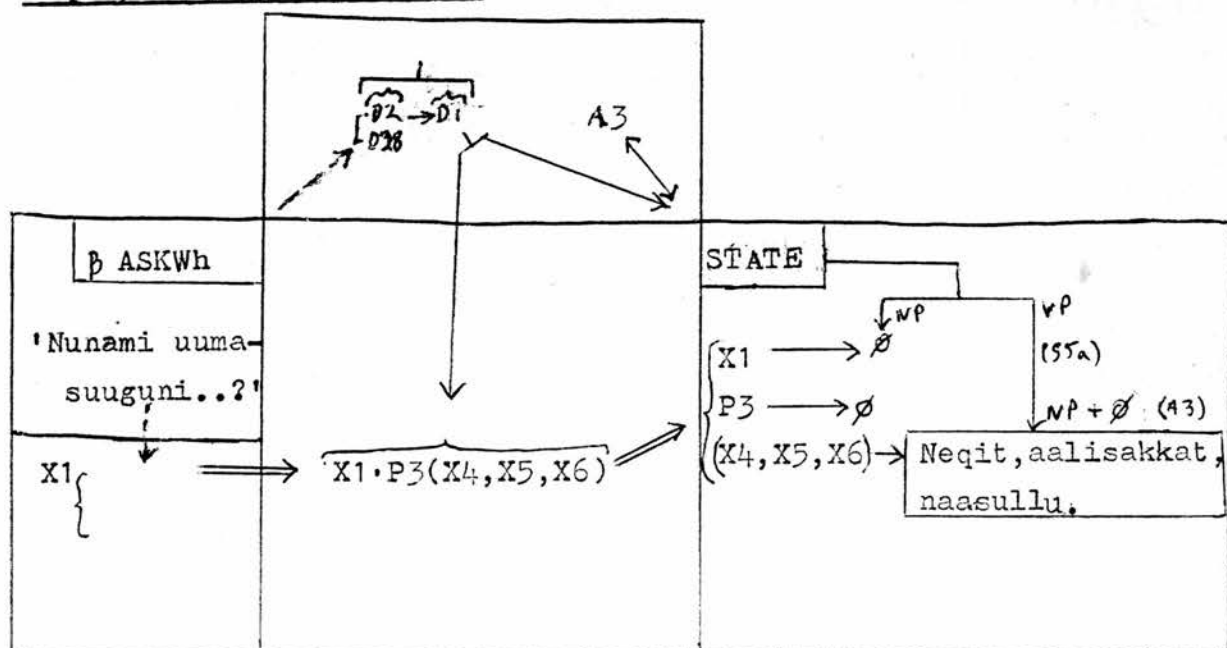
P3: -tor-([P/N] +) [V] (eat)

('su-': what (interrog.stem) [Pr])

D28: Request information (here as illicit game question)

('aap': yes)

α : Negit, aalisakkat, naasullu.



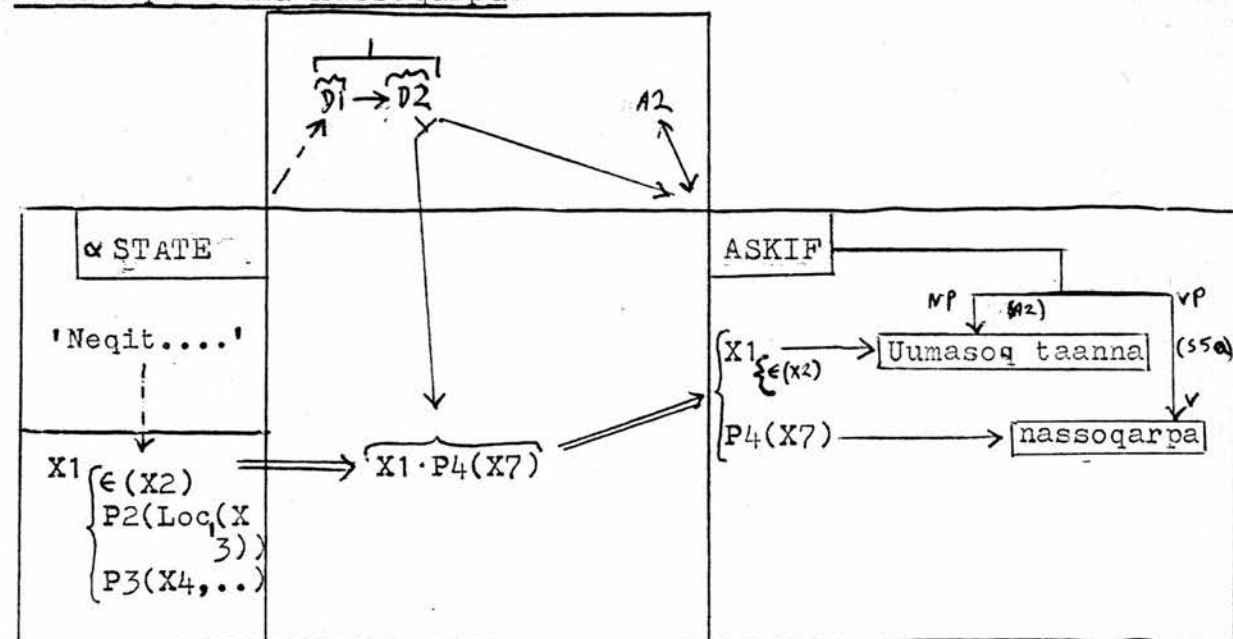
X4: negit [N]_{pl} (meat)

X5: aalisakkat [N]_{pl} (fish)

X6: naasut [N]_{pl} (plants)

('lu': and [Encl])

β : Uumasog taanna nassoqarpa?



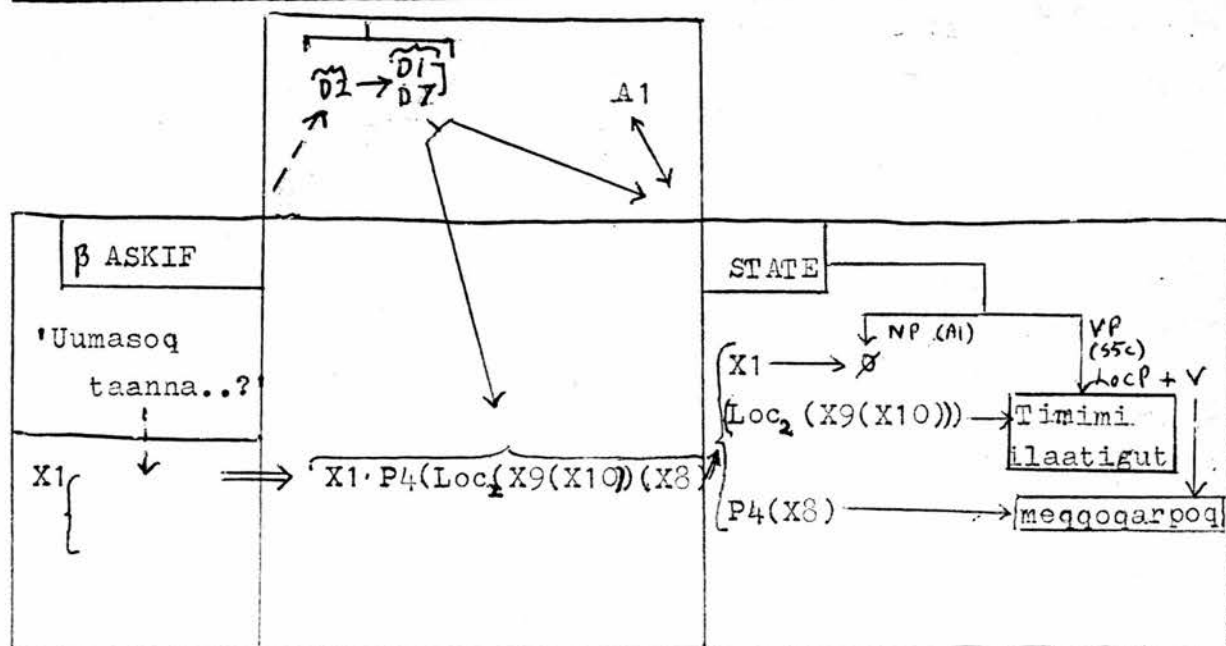
P4: -qar- ($[N] +$) [V_{sc}] (have)

X7: nassut [N_{pl}] (horns)

α : Naamik.

β : Uumasog taanna meqqoqarpa?

α : Timimi ilaatigut meqqoqarpoq.



X8: meqqoq [N] (fur/hair)

X9: ila [N] (part; -at igut: pros. pl. rel.)

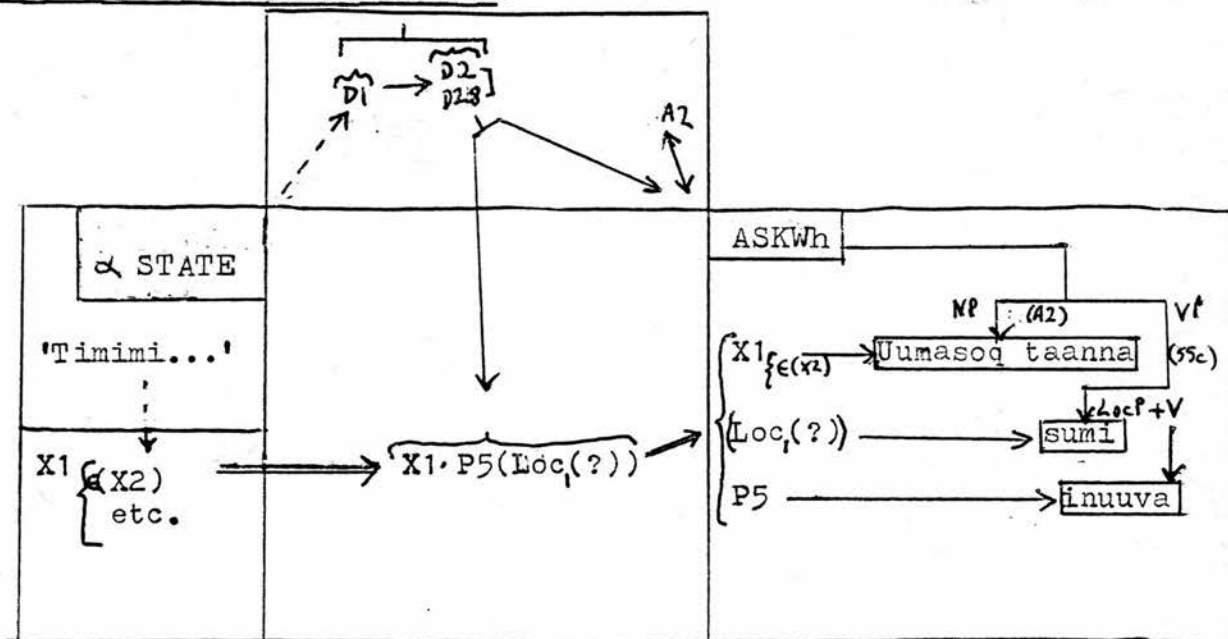
X10: timi [N] (body; - mi: 4th p. sing. dep.)

Loc₂: { pros.

D7: Rephrase

('naamik': no)

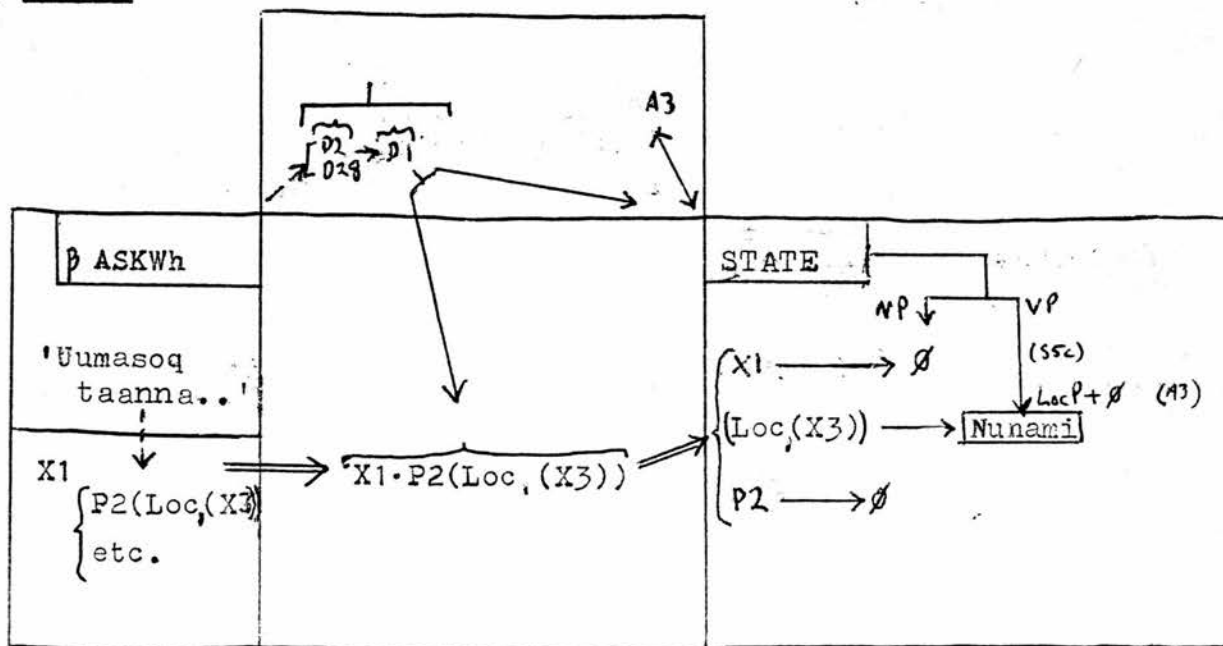
β : Uumasog taanna sumi inuuva?



P5: inuu- $[V]_{\text{intr}}$ (live; same as P2 but usually for humans)

D28: Req. Information

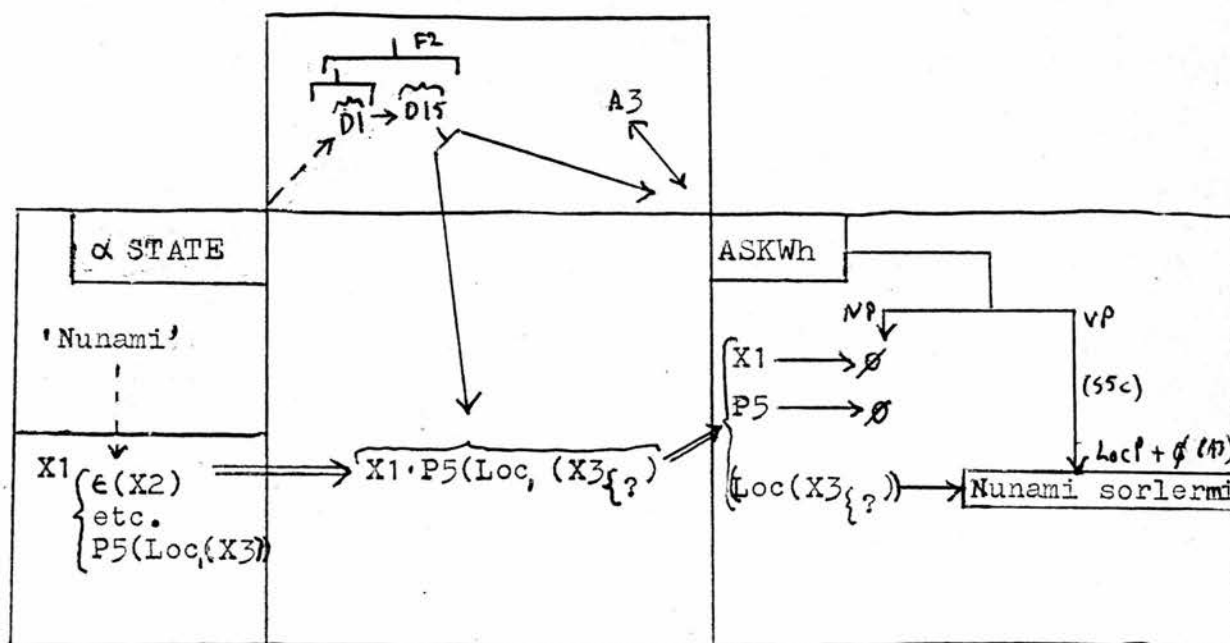
α : Nunami! *



*Intonation suggests impatience (at redundant question)

('Nunami' ambiguous: 'in a/the country' or 'on land')

β : Nunami sorlermi?



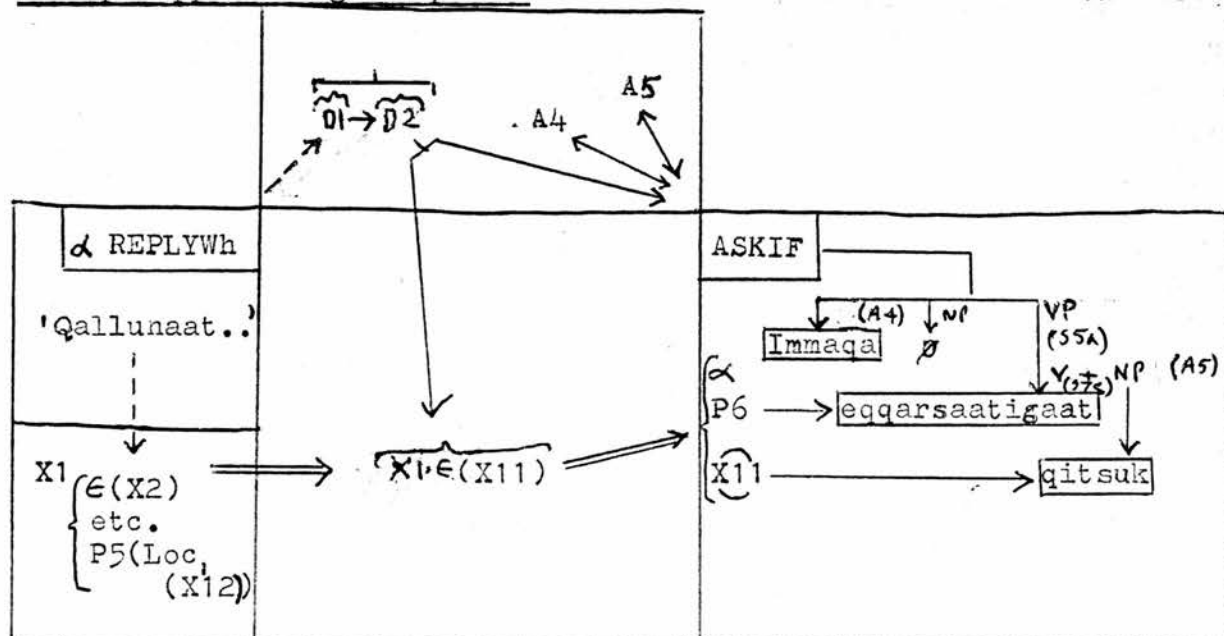
$D15$: Request Rephrase

('sorleq': what/which [Pr])

('mi': but [Encl])

α : Qallunaat nunaanni.

β : Immaqa eqqarsaatigaat qitsuk?



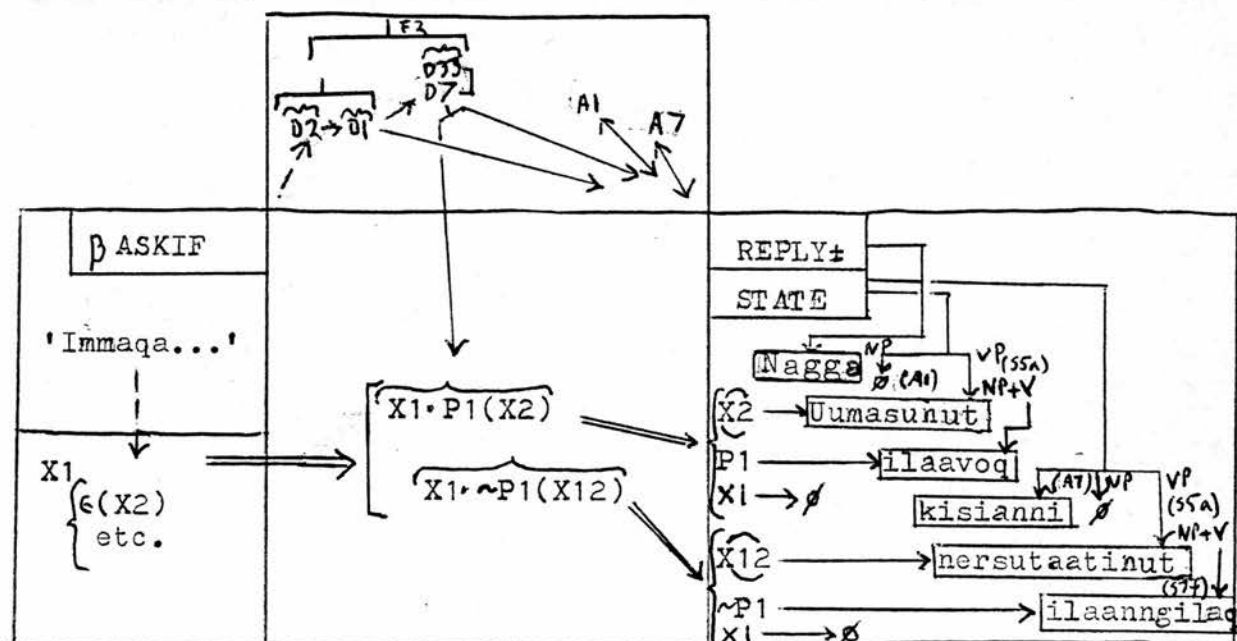
P6: eqqarsaatigi- $[V]_{\text{trans}}$ (think about) ('immaqa': perhaps SentAdv)

X11: qitsuk [N] (cat)

X12: Qallunaat nunaat $[N]_{\text{pl}} + [N]_{\text{rel}}$ (Denmark)

α : Nagga.Uumasunut ilaavoq,kisianni nersutaatinut

ilaangilaq.



$X12$: nersutaat(i) [N] (domestic animal ;hyponym of $X2$)

('nngilaq': negative of '-Poq')

('kisianni': but [Conj])

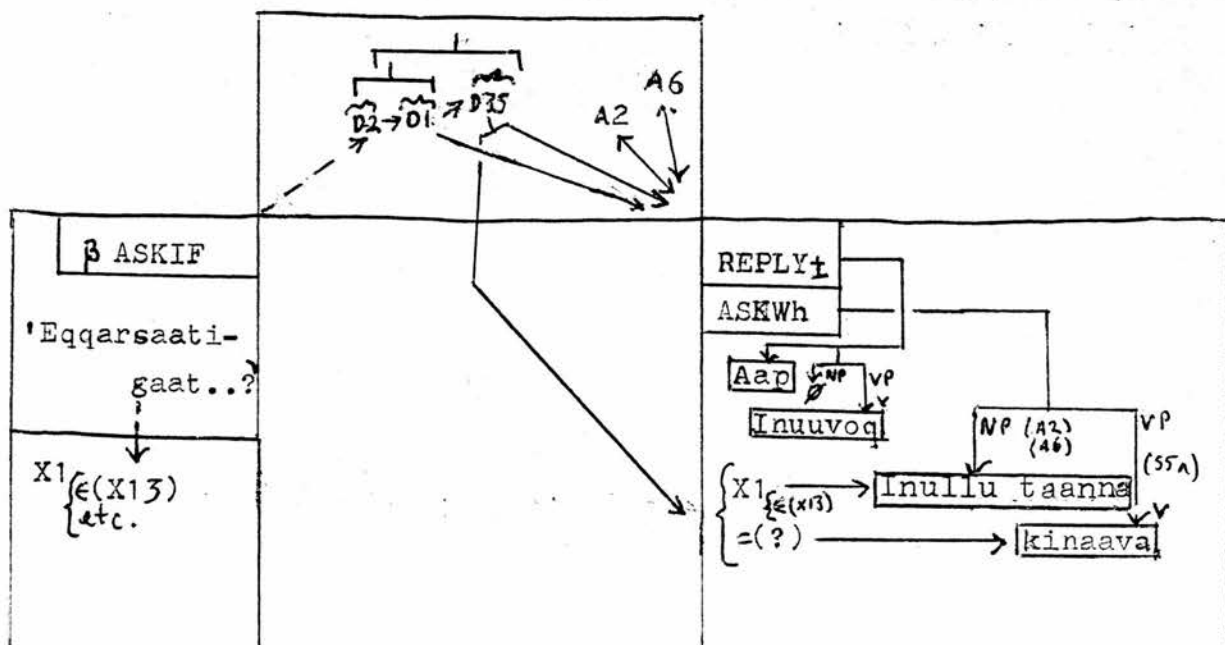
D33: Give Help

D7: Expand/Rephrase

('nagga': no)

β : Eqqarsaatigaat immaqa inuk?

α : Aap.Inuuvoq.Inullu taanna kinaava?



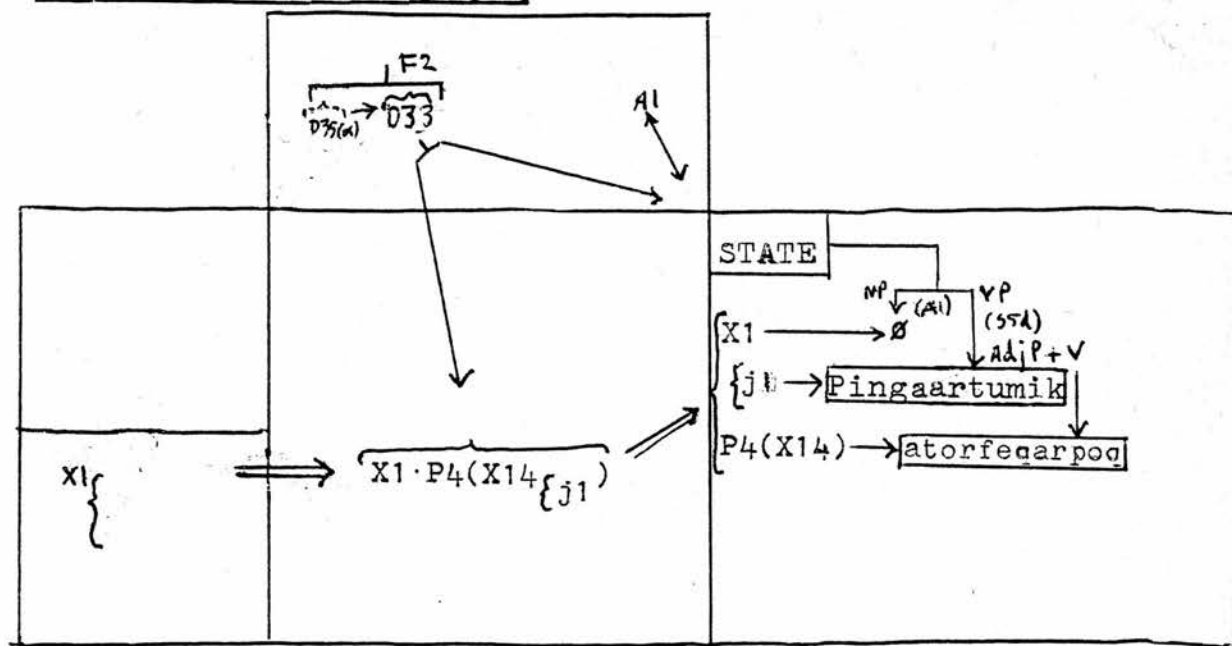
$X13$: inuk [N] (human being)

('u-': [Vs]: be) ('kina' [Pr]: who)

('lu': and [Encl])

D35: Prompt

α : Pingaartumik atorfeqarpog.



X14: atorfik [N] (job)

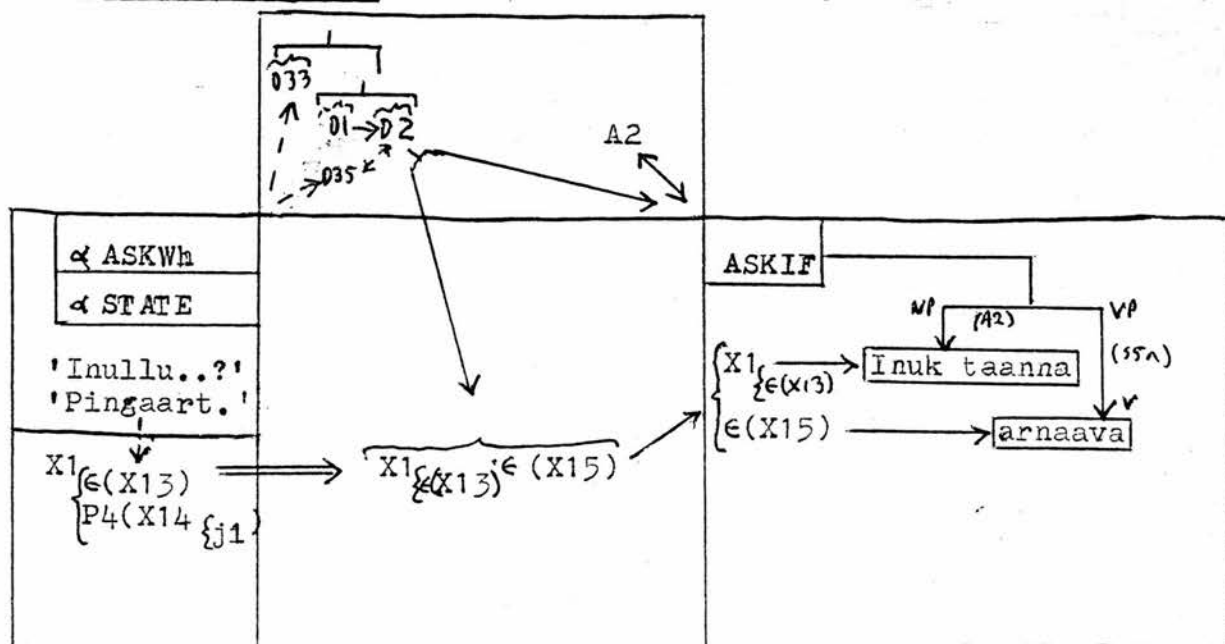
P4: -qar - ([N] +) [V_s]_{instr} (have)*

j1: pingaartoq [PresP] (important); -mik: instr.case

(*+unincorporated object in instr. case)

D33: Give Help

β : Inuk taanna arnaava?

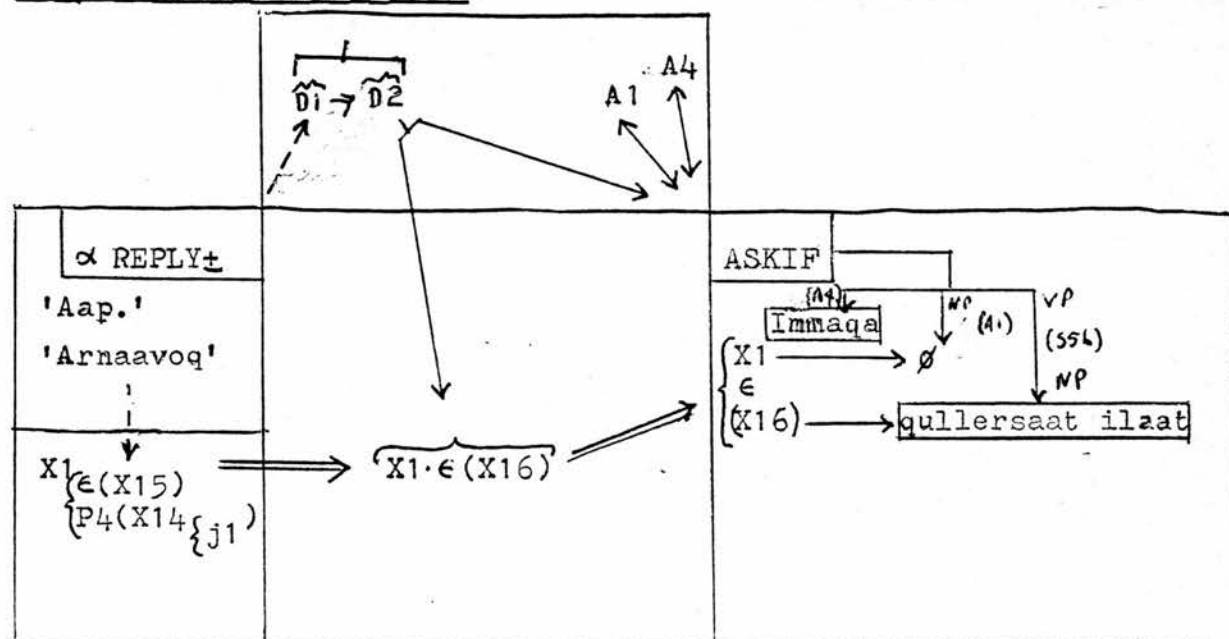


X15: arnaq [N] (woman)

('ava' = '-u-' + '-va')

α : Aap.Arnaavoq.

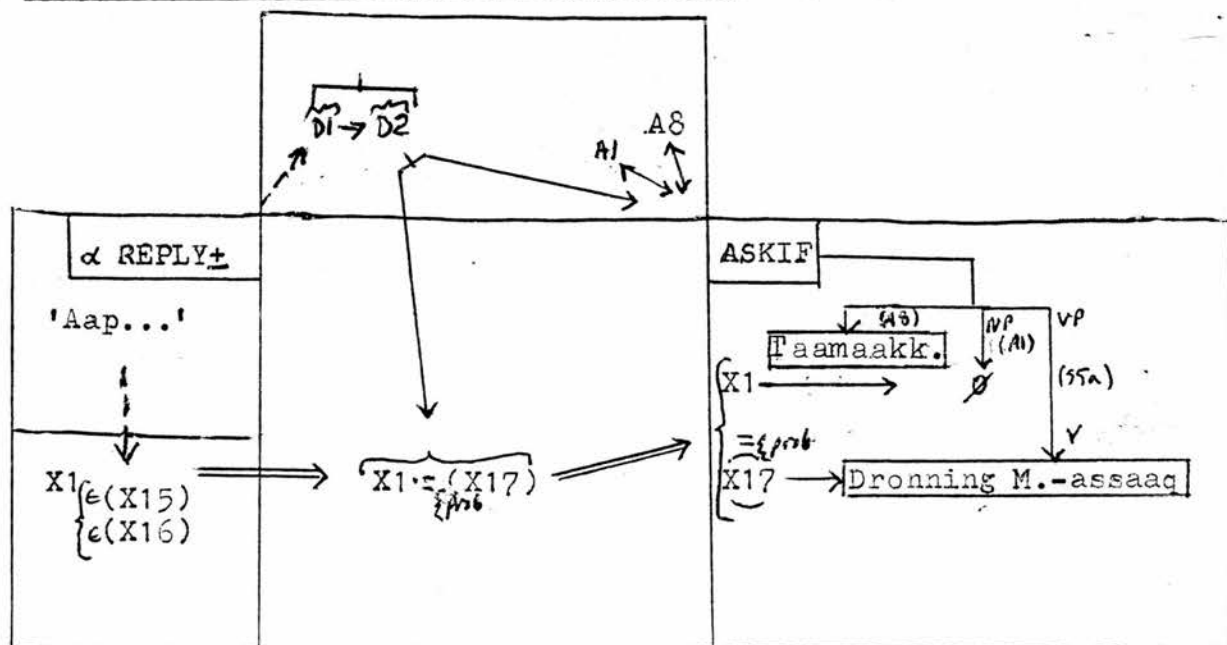
β : Immaqa gullersaat ilaat?



X16: gullersaat [N] ('those in authority/on top'); here in dep.case ('ilaat': one of (them); rel.case [N])

α : Aap.Qullersaavoq.

β : Taamaakkuni Dronning Margrethaassaag?



X17: Dronning Margretha [N] (Queen Margrethe) ('taamaakkuni': so [Conj])

(' -assaag': '-u' future tense)

(α : Aap.Dronning Margrethaavoq.)

Symbols of the Metalanguage

- \longrightarrow :efferent process
- \dashrightarrow :afferent process
- \Longrightarrow :inferential and other transformations and transferals of information
- $\{ \}$:a proposition
- $\{ \}$:two simultaneously generated propositions
- $[]$:syntactic category
- $()$:rule applying within (e)
- $/$:or(alternative)
- $//$:in the context of
- \sim :negative (or 'neg')
- $?$:doubt/unknown term
- X_i :argument(with semantic features in lowered bracket)
- P_j :predicate (" " ")
- j :modifier(of predicate or argument)
- \in :is a member of the class of
- \in :one of (the class of)
- $X_1(X_2):X_1$ of X_2
- $P(X)$:X the object of P
- \exists :there exists

AdjHg:adjectival hedge

All/pros/abs : allative/prosecutive/absolutive case (Eskimo)

Benef:beneficiary

CauseCl:causal clause

Comp:complement

Conc/anim : concrete particular /animate

CondCl:conditional clause

Cont:continuous

Contl:continually

Dem:demonstrative

Dep/rel: dependant/relative case (Eskimo)

Encl:enclitic(Eskimo)

Gen:genitive(Russian)

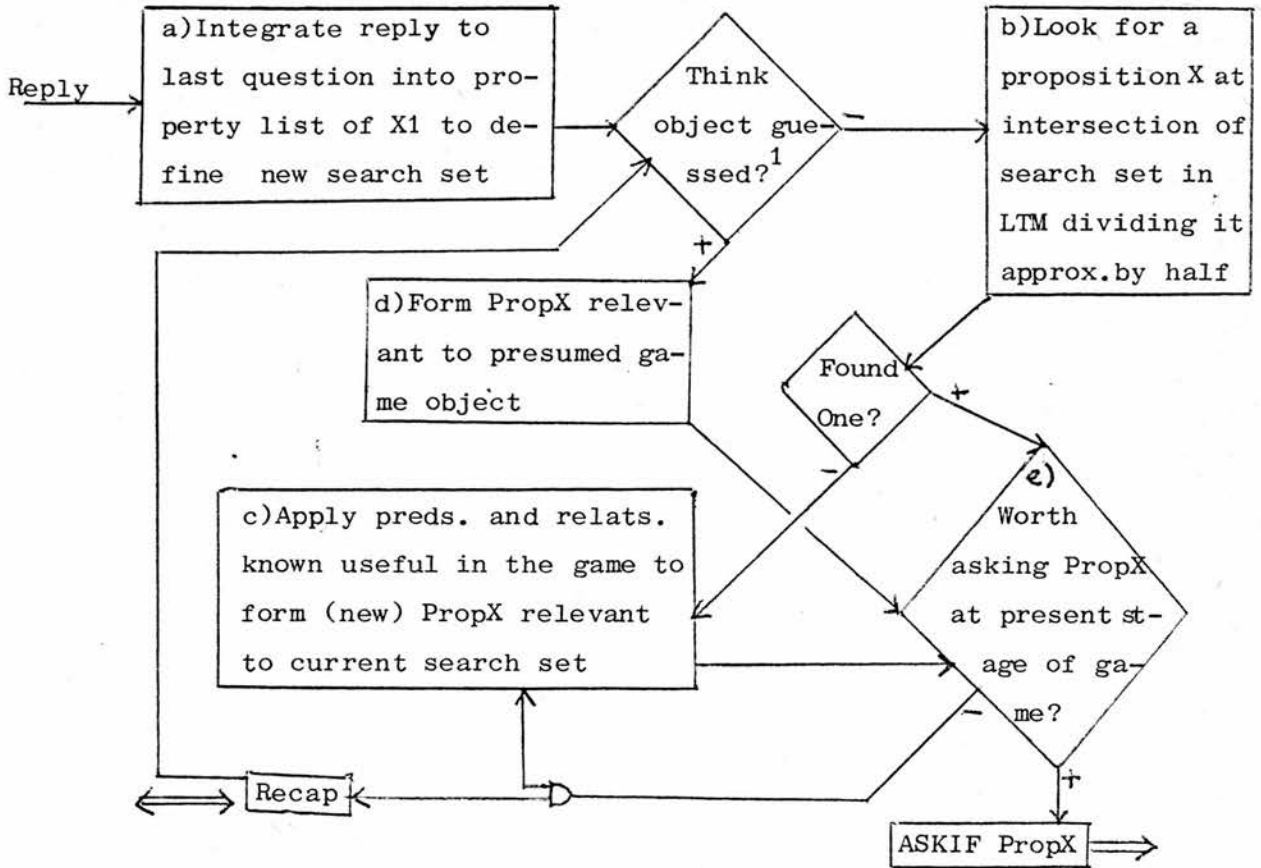
Hyp:hypothetical

Inc:incorporating(Eskimo)

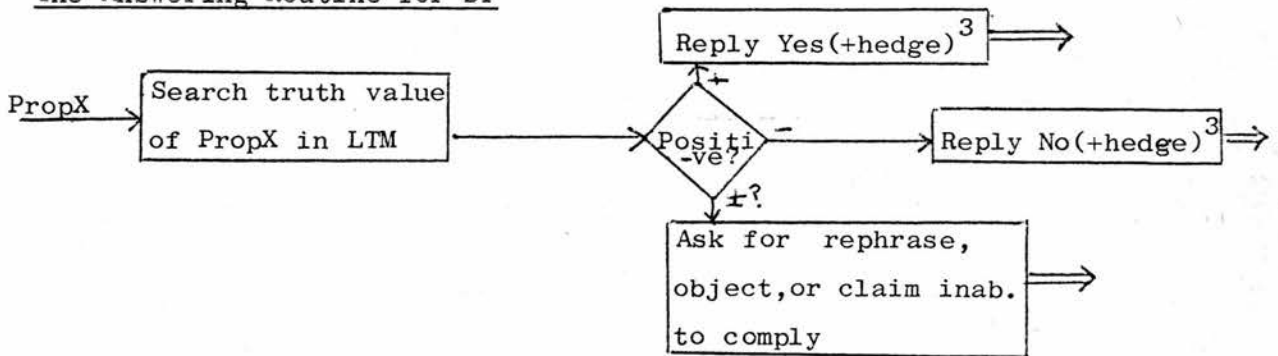
Instr:instrumental(Russian,Eskimo)

Intr: intransitive
Loc: locative (or location)
M/f/n: masculine/feminine/neuter (Russian)
Nom: nominative case (Russian) or nominalizer (Japanese)
NP/VP/TP: noun phrase/verb phrase/time phrase
N_s/N_e: nominal stem (or nominalizing suffix)/nominal ending (case+number - Eskimo)
Num/Quant: numeral/quantifier
Obj/Subj: object/subject
Pa/fut: past/future
Perf: perfective (Russian)
Part: part of (or particle - Japanese)
Pr/Conj: pronoun/conjunction
Pres: present
PresPP: present participle phrase
Pos: possible
PossPr: possessive pronoun
PP: post-position (Japanese)
Prob: probably
Quote: quoted form
RelCl: relative clause
SentAdv: sentential adverbial
Sing/pl/ma: singular/plural/mass word
Spec: specific
V/Aux: verb/auxiliary verb
V_s/V_e: verbal stem (or verbalizing suffix)/verbal ending (mood+person - Eskimo)
Vinf: infinitive of verb
Vpot/Vpass: potential/passive verb (Japanese)

The Question-formulating Routine for D2



The Answering Routine for D1²



¹ i.e. there is only one candidate object corresponding to the new search set in LTM, or a 'plausible leap' to such a candidate has been triggered

² This embodies both the response sequence rule for D2 (Game Question) and the realization rule for D1 (Answer); output (double arrows) for D1 is thus REPLY± or Req.Rephrase, Object, C.I.toC., and for D2 it is Game Question (typically ASKIF-p) or Recap.

³ And add one to the game count

Response Sequence Rules(for all four games)

Sequence:	Conditions:
D38(<u>Announce</u>) \Rightarrow D2(<u>Game Q.</u>)	First game exchange(prop.content of D38=animal/mineral/veget.)
D2 \Rightarrow D1(<u>Answer</u>) D1 \Rightarrow D2	Game moves(must be returned to after any other sequence)
D1/D2 \Rightarrow D4(<u>Req.Rephrase</u>)	Initial utterance unclear but rephra- sable satisfactorily)
D1/D2 \Rightarrow D15(<u>Object</u>)	Initial utt.unclear or breaks a rule
D4/D15 \Rightarrow D7(<u>Rephrase</u>)	D7 redresses the grounds for the obj- ection
D1/D2 \Rightarrow D44(<u>Req.Confirm.</u>)(Rhet.) ¹	Initial utt.unclear but speaker of D44 has hypothesis as to meaning
D1 \Rightarrow D18(<u>Recap</u>)	Questioner stuck
D2 \Rightarrow D35(<u>Prompt</u>)	Object guessed but not phrased correc- tly
D2 \Rightarrow D21(<u>Concede</u>)	Game object guessed(though some doubt as to phrasing)

These rules - marked on the output of the relevant demons in the Meta-frame -are of course specific to the 'Twenty Questions' context(though in part derivable from similar linkage rules for more general situations).They do not include cases of sequences caused by independant activation of demons such as that for Give Help or Declare(game count) conditioned by wider game-context factors than just the preceding act, nor of sequences involving 'blends'(two of the above rules operating at once or the act on the right of the rule blending with a possible pre- or post-head),or of sequences of acts (around a 'head')performed by one speaker.

¹ i.e. followed by \emptyset - a return to the game exchange.In one instance, in Game 17,it is expanded (by the same speaker)to a subsequent D50 (Declare) and D6(Justify Self),but this is determined by the speaker's attempt to prevent the question being counted and is not a matter of response sequence rule.

Syntactic Rules for Game 17(English)

- S0 a) STATE \rightarrow ([Conj] +) ([SentAdv] +) [NP] + [VP] (+[CauseCl] / [CondCl])
 b) ASKIF \rightarrow [Aux] + [NP] + [Comp] (+[CondCl])
 c) REPLY \rightarrow ([NP] + [VP] +) yes/no (+[NP] + [VP])
 d) ASKWH \rightarrow [WhPr] + [Aux] + [NP] + [Comp]
 e) ASKEI/OR \rightarrow [Aux] + [NP] + [Comp]₁ + or + [Comp]₂
 f) IMP(1stp) \rightarrow let + [NP] + [VP]

- S1 a) [CauseCl] \rightarrow (be) cause + [NP] + [VP]
 b) [CondCl] \rightarrow if + [NP] + [VP]

- S2 [NP] \rightarrow [Det] / [PossPr] / [Dem] + ([Adv] +) ([Quant] +) ([Adj] / [AdjHg] +) [N]¹
 (+[LocP]) (+or + [NP])

- S3² a) [NP]₁ + [VP] \rightarrow [NP]₁ (+[Aux] +) [V] (+[NP]₂) // X₁.P[V](X₂) // (unmarked tense)
 b) " " [NP]₁ + be [Aux] (+not) + [AdjP] // X₁.P[Adj] //
 c) " " [NP]₁ + keep [V] + [PresPP] // X₁.P_{contl}[V] //
 d) " " [NP]₁ + be [Aux] (+not) + [NP]₂ // X₁.P_ε(X₂) //
 e) " " there + be [Aux] + [NP]₁ + [LocP] // E(X₁).Loc(X₂) //
 f) " " [NP]₁ + will [Aux] + [V] (+[NP]₂) // X₁.P[V]_{fut}(X₂) //
 g) " " [NP]₁ + [V]_{pa} (+[Prep]) (+[NP]₂) // X₁.P[V]_{hyp}(X₂) //

- S4² a) [Aux] + [NP]₁ + [Comp] \rightarrow be [Aux] + [NP]₁ + [NP]₂ // X₁.P_ε/(X₂) // (unmarked tense)
 b) " " " be [Aux] + [NP]₁ + [AdjP] // X₁.P[Adj] //
 c) " " " do [Aux] + [NP]₁ + [V] + [NP]₂ (+[TP]) (+[LocP]) // X₁.P_V¹(X₂) //
 d) " " " be [Aux] + [NP]₁ + [Prep] + [NP]₂ // X₁.P[Prep](X₂) //
 e) " " " be [Aux] + [NP]₁ + [PresPP] // X₁.P[V]_{cont pres} //
 f) " " " be [Aux] + [NP]₁ + [LocP] (+[Adv]) // X₁.Loc(X₂) //
 g) " " " be [Aux] + there + [NP]₁ + [LocP] // E(X₁).Loc(X₂) //
 h) " " " would [Aux] + it + be [V] + [Adj] + [CondCl] // P[Adj] .
 (X₁.P_{hyp}) //

¹ Or [Pr] (without optional constituents before)

² [VP] and [Comp] may be redundant categories if S0 is allowed to be input sensitive; expansions of [V] and [Aux] (for tense, etc.) shared by the two rule sets S3 and S4 could then be integrally stated just once.

- S5 a) $[NP]_{\text{sing/pl}} + [V]/[Aux] \longrightarrow [NP] + [V]_{\text{sing/pl}}/[Aux]_{\text{sing/pl}} // X.P //$
 b) $you + [V]/[Aux] \longrightarrow you + [V]_{\text{pl}}/[Aux]_{\text{pl}} // X.P //$
 c) $[Aux] + [NP]_{\text{sing/pl}} \longrightarrow [Aux]_{\text{sing/pl}} + [NP] // \text{ASKIF } X.P //$
 d) $there + be + [NP]_{\text{sing/ma}} \longrightarrow there + is + [NP] // E(X) //$
 e) $be + there + [NP]_{\text{sing/ma}} \longrightarrow is + there + [NP] // \text{ASKIF } E(X) //$
- S6 $[AdjP] \longrightarrow ([AdjHg] +) [Adj]$
 S7 $[LocP] \longrightarrow [Prep] + [NP]/[Adv]$
 S8 $[PresP] \longrightarrow [V] + ing (+ [NP])$
 S9 $[TP] \longrightarrow [Adv]/[NP]/[Prep] + [NP]$
 S10 a) $[Det] \longrightarrow a // X_{\text{sing spec/1e}} //$
 b) " $\emptyset // X_{\text{ma spec}} //$
 c) " $the // X_{\text{spec}} //$

Discourse-Level Rules for Game 17(informal)

- A1:Delete all but the new item(s) of information if repeating the same propositional pattern¹ as in the preceding exchange.
 A2:Stress any word that is contrasted to another just mentioned in the preceding exchange(in the same propositional pattern).
 A3:Start an utterance with 'but' if it expresses a contrast with an immediately preceding one.
 A4:Replace a $[VP]$ by 'do' if it would otherwise mean repeating the $[VP]$ of the preceding utterance.
 A5:Start an utterance with 'well' if it is a comment on the outcome of an action(verbal or not)just completed.
 A6:Replace a $[NP]$ by 'it' if the singular referent is understood as the current discourse topic - e.g. the game object.
 A7:Replace a $[NP]$ by 'one' if it refers to one member of a class just mentioned(or understood as the current topic).
 A8:Replace a $[NP]$ by 'which' if it refers to the whole preceding statement as the subject of the present main clause.
 A9:Begin a statement of intent,etc.,with 'O.K.' if it makes a decisive break with the preceding exchange.

¹ i.e. the same syntactic pattern with analogous propositional content

Syntactic Rules for Game 43(Russian)

- S0 a) $\boxed{\text{STATE}} \longrightarrow ([\text{Conj}] +) ([\text{SentAdv}] +) [\text{NP}] (+ [\text{SentAdv}]) + [\text{VP}]$
 b) $\boxed{\text{ASKIF}} \longrightarrow \text{" " " " " (plus question intonation)}$
 c) $\boxed{\text{REPLY}_{\pm}} \longrightarrow \text{Da}(\text{tak})/\text{net}$
 d) $\boxed{\text{ASKWh}(\text{Subj})} \longrightarrow [\text{WhPr}] + [\text{NP}] + [\text{VP}]$
- S1 a) $[\text{RelCl}_{\text{Subj}}] \longrightarrow [\text{RelPr}_{\text{Subj}}] (+ [\text{Adv}]) + [\text{VP}] / [\text{LocP}]$
 b) $[\text{RelCl}_{\text{Obj}}] \longrightarrow [\text{RelPr}_{\text{Obj}}] + [\text{NP}] + [\text{VP}]$
- S2 $[\text{NP}] \longrightarrow ([\text{PossPr}] / [\text{Dem}] +) ([\text{Adj}] / \text{sam}(a)^1 +) [\text{N}] / [\text{Pr}] (+ [\text{N}_{\text{gen}}]) (+ [\text{Prep}] + [\text{NP}]) (+ [\text{RelCl}])$
- S3 a) $\text{VP} \longrightarrow [\text{Prep}] + [\text{NP}] // \text{X.P} [\text{Prep}] (\text{X}_2) //$
 b) $\text{" " } [\text{NP}] // \text{X.} \neq (\text{X}_2) //$
 c) $\text{" " } (\text{ne}+) [\text{V}] (+ [\text{Vinf}]) (+ [\text{NP}]) // \text{X.} (\sim) \text{P} [\text{V}] (\text{X}_2) //$
 d) $\text{" " } [\text{AdjP}] // \text{X.P} [\text{Adj}] //$
 e) $\text{" " } [\text{LocP}] // \text{X.Loc} (\text{X}_2) //$
- S4 $[\text{LocP}] \longrightarrow ([\text{Adv}] +) [\text{Prep}] + [\text{NP}] / [\text{Adv}]$
 S5 $[\text{AdjP}] \longrightarrow ([\text{Adv}] +) [\text{Adj}] (+ [\text{LocP}] / [\text{Prep}] + [\text{NP}])$
- S6 a) $[\text{Prep}]_{\text{case}} + [\text{NP}] \longrightarrow [\text{Prep}] + [\text{NP}]_{\text{case}}$
 b) $[\text{NP}]_{\substack{\text{sing/pl} \\ \text{m/f/n} \\ \text{nom}}} + [\text{Adj}] / [\text{V}] \longrightarrow [\text{NP}] + [\text{Adj}] / [\text{V}]_{\substack{\text{sing/pl} \\ \text{m/f/n} \\ \text{nom}}} // \text{X.P} [\text{Adj}] / [\text{V}] //$
 c) $[\text{Adj}] / [\text{Dem}] + [\text{N}]_{\substack{\text{sing/pl} \\ \text{m/f/n} \\ \text{case}}} \longrightarrow [\text{Adj}] / [\text{Dem}]_{\substack{\text{sing/pl} \\ \text{m/f/n} \\ \text{case}}} + [\text{N}]$
 d) $[\text{V}] + [\text{Pr}] / [\text{N}]_{\substack{\text{msc} \\ \text{sing}}} \longrightarrow [\text{V}] + [\text{Pr}] / [\text{N}]_{\text{gen}} // \text{P} [\text{V}] (\text{X}) //^2$
 e) $[\text{Pr}] + \text{ne} + [\text{V}] \longrightarrow [\text{Pr}]_{\text{neg}} + \text{ne} + [\text{V}]$

Discourse-level Rules for Game 43

- A1: Replace a $[\text{NP}]$ by 'eto' if it refers to the current topic of discourse - e.g. the game object.
 A2: Delete any element (but the new information) if the same propositional pattern is being used as in the preceding exchange.
 A3: Replace a $[\text{NP}]$ by 'on' if it refers to a single male being understood by both participants.

¹ Also found after the head noun

² For unmarked transitive verbs (others take marked cases)

A4: If a statement is made only tentatively insert 'mozhet (byt)' ([SentAdv]).

A5: Start an utterance with any thematically high-lighted element, if there is one.

A6: Start an utterance with the conjunction 'tak' or 'togda' if it expresses a conclusion drawn from what precedes it.

A7: If a statement is made upon superficial evidence insert 'kazhetsa' ([SentAdv]).

²Or ni for verbs marked as taking an object with this [PP]

Syntactic Rules for Game 10 (Eskimo)

- S0 a) STATE \rightarrow ([Conj]) ([CondCl]) ([SentAdv]) ([NP]) ([SentAdv]) ([VP])
 b) ASKIF \rightarrow " " " " " " (+Int)
 c) ASKWH \rightarrow " " " " " " "
 d) REPLY \rightarrow Aap / Naamik (Nagga) (+ [NP]) ([VP])

S1 [CondCl] \rightarrow [NP] + [VP]

S2 [NP] \rightarrow ([N_s] / [Pr]) + ([N_e]_{dep}) + ([N_s] / [Pr]) + ([N_e]) (+ [Encl])

S3 [LocP] \rightarrow [N_s] / [Pr] + [N_e]_{loc}

S4 [AdjP] \rightarrow [Adj] + [N_e]

S5 a) [VP] \rightarrow ([NP]) ([V]) // X₁.P [V] (X₂) //

b) " [NP] // X₁ = / ∈ (X₂) // (alternative to S5a)

c) " [LocP] + [V] // X₁.P (Loc(X₂)) //

d) " [AdjP]_{instr} + [NP]₂ + [V]_s // X₁.P [V]_{intr} (X₂ [Adj]) //

S6 [V] \rightarrow [N_s] / [Pr] + [V]_s + [V]_e¹

S7 a) [V]_e \rightarrow -Poq² // STATE X₁ {sing_{3rd p}.P[V]_{intr} // (unmarked present/past tense)

b) [V]_e \rightarrow -Pa // ASKIF X₁ {sing_{3rd p}.P[V]_{intr} //

c) " -Pat³ // STATE X₁ {sing_{2nd p}.P[V]_{intr} (X₂ {sing_{3rd p}}) //

d) " -ssaaq // STATE X₁ {sing_{3rd p}.P[V]_{intr} / fut / prob //

e) " -guni // X₁ {sing_{4th p}.P[V]_{intr} //

f) " -nngilaq // STATE X₁ {sing_{3rd p}.P[V]_{intr} //

S8 a) [N_e] \rightarrow -nut // X₁ {pl₁ //

b) [N_e] \rightarrow ∅ // X₁ {sing_{abs} //

c) " -mi // X₁ {loc_{sing} // or // X₁ {4th p_{dep} //

¹ Generally, [V] \rightarrow [N_s] / [V]_s + (... [V]_s ...) + [V]_e, where the brackets enclose any series of suffixes ending in a [V]_s (which may also represent '=' or 'e').

² 'p' is a morphophoneme realized as /v/ or /p/

³ And -gi[V]_s + -Pat \rightarrow -gaat

- d) $[N_e] \rightarrow -\underline{\text{tigut}} // X \begin{cases} \text{pl} \\ \text{pros} \end{cases} //$
- e) " $-\underline{\text{mik}} // X \begin{cases} \text{sing} \\ \text{instr} \end{cases} //$

Discourse-level Rules for Game 10

- A1: Delete 'subject' $[NP]$ if understood as referring to the current topic
(e.g. game object)
- A2: Replace $[NP]$ by $[N] + \underline{\text{taanna}}$ (where $[N]$ is a superordinate set to which the referent belongs) if referring to an unspecified object of which a set-membership property has been established.
- A3: Delete all but the new item(s) of information if repeating the same propositional pattern as in the last exchange.
- A4: Begin an utterance with 'immaqa' if making a tentative statement.
- A5: Place the non-incorporated object of a verbal form after the latter if it is to be thematically stressed.
- A6: Add '-lu' to the first nominal of an utterance if the latter is an extension of the content of the preceding one.
- A7: Begin an utterance with 'kisianni' if it contrasts with the preceding one.
- A8: Begin an utterance with 'taamaakkumi' if it represents a conclusion drawn from the preceding one(s).

Chapter 7

Players of the game were found to evince a considerable range of skill between individuals. It was not, however, possible to relate skill generally to relative experience with the game, nor with any other single factor such as subjectively assessed level of intelligence or education; this latter factor was even found to correlate negatively in some cases, due perhaps to the recording situation and to concerns about performing well in the presence of others. Factors that were clearly relevant to performance were: the relationship between the two players (whether they were friends¹ or in a staff-student relationship, etc.); seriousness or casualness of the game atmosphere; willingness to proceed in an intuitive as opposed to strictly logical manner; and general alertness at the time of playing. The great majority of players claimed no more familiarity with the game than having heard it occasionally on the radio (for example the well-known BBC team version some years ago) and having played it from time to time when younger (this also included most non-English speakers). A few players - including two of the Eskimo speakers - claimed no prior knowledge of it at all and had to be taught the rules 'from scratch', while a few had had considerable experience with some version of the game - typically teachers of English abroad using it as a class exercise. In the former case a reading of the rules (see Appendix) plus a couple of practice rounds were sufficient to play an adequate - and in some cases excellent - game, once the convention of dividing the universe into 'animal, mineral and vegetable' was grasped (and the terms translated, as required).

Despite the overall lack of clear-cut correlation between skill and experience, an examination of the transcripts shows that there are indeed certain typical features of games played 'well' or 'badly', as judged by the time and number of questions taken to guess the correct answer - if it is guessed at all. For example, a very basic - though not always applicable - strategy is to ask questions about properties that more or less divide the current search set by a half (see strategy (i) below); this is generally understood at once by beginners. Although there is not enough data in the corpus to substantiate the claim that more experienced players do appear to develop more sophisticated stra-

¹ Friends, for example, typically convey more subtle information by intonation and various paralinguistic means than strangers.

tegies than beginners, the impression was given that the former had incorporated more 'useful question types' (see strategy (iii) below) into their playing of the game. This information must also include indications of suitable contexts in which to apply particular question types, and how long to persist with one question type if a negative reply is at first elicited. A 'good' player would also seem to be one capable of taking inferential 'short-cuts' and of making the occasional 'intuitive leap' (see strategy (ii) below) by asking a question that is 'reasonable' only in the light of a specific hypothesis he/she has formed on the basis of their experience with 'typical' game objects. In general, the poorer player can be recognized by the preponderance of redundant or 'random' questions with relatively little significant chaining from one to the next.

In order to examine more closely the question of strategy, consider the following 'skeletal' outlines of English games recorded for the game object 'Princess Anne'. They can be taken to represent the 'key-word' property list (somewhat abbreviated) built up by the questioner during the course of the game. Redundant properties are not 'collapsed', so the order in which the property list was accreted is preserved. Negative properties are preceded by '~' and doubtful or hedged ones¹ by '?'; all the games were correctly solved at the end.

'Princess Anne' games:

G.3	G.37
animal	animal
native to Britain	human
~ have long fur	~ male
has two legs	adult
~ man	alive
female	Q-er ~ know personally
~ to do with acting	well-known
~ to do with academic world	~ M. Thatcher
living	British
born after war	~ show bus. celebrity
well-known	~ involved in politics(?)
~ to do with artistic world	~ the Queen
~ politician(?)	~ Princess Margaret
(cont.)	

¹ This includes tentative intonation

has famous husband(?)

husband ~ have same work?)(clue)

~ the Queen

close to Queen

G.39

animal

human

whole human

~ male

~ member of department

~ TV celebrity(?)

~ sportsperson

of similar standing to royal
family

~ the Queen

member of royal family

G.42

animal

~ non-human

person

Q-er and A-er ~ know person-
ally(?)

western

~ American

British

well-known

~ political figure(?)

woman

~ to do with entertainment(?)

involved with media(?)

~ employee of BBC

sports personality

G.31

animal

human

~ member of department

known to Q-er by name

English

public figure

~ politician

~ writer

~ entertainer

known to Q-er by virtue of
office(?)

female

~ the Queen

member of royal family

G.28

animal

~ in building

~ in Edinburgh

in Britain

larger than briefcase

smaller than house

person

shouldn't be in politics(clue)

~ male

~ the Queen

~ involved in entertainment(?)

~ Princess Margaret

~ academic

involved in sport(clue)

A number of points should be made about these property lists. First, they are subject to the fallibility of memory in general - they may or may not correspond exactly to the accreting episodic memory of the game being played, but they are at least extractable from the latter,

and individual properties may be forgotten or remembered incorrectly. They are furthermore subject to the imprecision of certain concepts embodied in them - for example, Princess Anne is described as a 'sports personality' in Game 42 but as 'not a sportswoman' in Game 39, both of which are in a sense correct attributions. We are dealing here not with algorithmically tested truth-values of propositions, but with judgements of a more or less 'hedged' nature, even when the hedging is not overt. There are also examples of apparent illogicality to be found: thus in Game 3 the property 'man' is followed directly by one resulting from the now redundant question 'Is it female?' (this may be relatable, however, to a misunderstanding on the questioner's part as regards the sense of 'man' in the proposition 'It's not a man').

Examining these and similar lists for evidence of particular strategies one finds three major ways by which the subsequent question to be asked is chosen; these have been incorporated into the strategy component flow diagram on page 166. The three competing strategies (of which the first to generate a sufficiently 'good' question is the one acted upon in a given game situation) are as follows: (i) a 'top-down' subdivision of the current search set by a factor of about a half (cf. box (b) on the flow diagram); (ii) a 'bottom up' strategy of asking about a property of a specific entity (or entity class) within the current search set reached by an 'intuitional leap' as a likely candidate (cf. box (d) on the flow diagram); and (iii) the asking of a 'useful question-type' (useful here means 'known generally to aid successful playing of the game; cf. box (c) on the flow diagram). Apart from these general strategies more specific chains of inferential reasoning may intervene at any point. The reason why such a complex interaction of strategies is found even in games played by beginners is not difficult to see: given the fact that it is simply not possible (due to cross-categorization) to subsume the whole universe known to the questioner into one hierarchical tree which can be worked down branch by branch in the manner of strategy (i)¹, it is not surprising that other means of proceeding have to be drawn upon. And strategies (ii) and (iii) surely correspond to heuristic procedures utilized in

¹ Even if such a tree were possible for a closed set of game objects this strategy would prove to be highly inefficient and 'unnatural'; see the description of the program in Chapter 9.

a wide range of general cognitive functions. Despite the element of randomness involved (due to the tendency to ask the first 'good' question that happens to be thought of and to the co-existence of a number of equally 'good' potential questions at any one point in a game¹), more can be said about the interaction of strategies evidenced in the data.

The 'top down' strategy is most readily employed at times when - as at the outset of a game - the search set corresponds to a concept referable to by a single word or phrase (which conceivably acts as an 'address' to a number of propositions subdividing that concept by relationships of hyponymy, etc.). Thus questions concerning the property 'human' commonly occur immediately after the property 'animal' is known. But notice that even here the search set is not strictly numerically divided by a factor of two; nevertheless the division of the concept 'animal' into 'human' versus 'non-human' probably is, psychologically, the most basic and generally useful distinction people do make here, and even beginners to the game seem to realize that questions about intermediate categories such as 'mammal' are not as useful (cf. Rips, Shoben and Smith, 1973, for evidence concerning such 'natural' hierarchies). Cases where there is one outstanding property more or less exactly dividing the search set by two, such as the division of the concept 'human' into 'woman/man', are relatively rare. And, of course, it is possible for a number of other question types to intervene between the assertion of 'human' and asking about the sex of the person - as in Game 31. The question that is asked immediately after the former in this case ('Is it a member of the department?') certainly doesn't reduce the search set by anything like a half: a 'hunch' has been followed (according to strategy (ii)), which doesn't in fact pay off, though if the answer had been 'yes' the search set would have been reduced by considerably more than a half. Moreover the questioner can infer useful information even from the negative reply: namely that the person to be guessed must be famous. This is not strictly speaking a logical

¹ Note box (e) on the flow diagram, which evaluates whether a candidate proposition (however arrived at) is worth asking at that point in the game; it must involve some sort of weighting of the number of questions left and the degree to which a yes/no reply would reduce the current search set (optimal reduction being sought).

conclusion, but represents within the game context a highly probable deduction - it is a contingent fact that game objects must be known to both players and that the great majority of human beings known to them both and not generally famous are members of the department (the players both being on a course in the same department but not otherwise friends). This sort of 'plausible deduction' seems to be much more significant in 'Twenty Questions' than strictly syllogistic inference.

Already when the search set is reduced, as above, to 'woman', a continued application of strategy (i) becomes difficult¹: there are just too many ways of subdividing the set at this point. Although it is possible for the next question to be - according to strategy (i) still - 'Is the female adult?', as in Game 37, it becomes increasingly likely that strategy (ii) or (iii) will be brought to bear. Thus, in the latter case, a 'useful question-type' for profession, location or nationality, for example, could be applied. Some such question-types are just 'two-branched' (i.e. have two values, plus or minus, as that for 'alive/dead', and duplicate distinctions to be found by applying strategy (i)) but others, such as those mentioned above, form hierarchical 'trees': they can be applied a number of times in succession with a different - and in the case of a 'yes' answer more specific - predicate each time. The first value ascertained for such a variable predicate - e.g. that for 'profession' - will depend in part, presumably, on the salience in the questioner's long-term memory of (in this case) women of a particular profession: thus whether the (well-known) woman is connected with show business is often asked. Though this may by chance represent roughly half of all the well-known women the questioner knows of, the numerical criterion is clearly not the only factor at work, since the first question about profession in more than one of the games above is as to whether the woman is engaged in politics (a rather specific 'hunch': surely most people know of fewer women politicians than women entertainers/film stars, etc.). Strategies (i) and (ii) may, then, both be involved in generating particular predicates for the application of strategy (iii) - that of 'good question-types'. It is also possible for unrelated questions to intervene between successive tokens of a 'useful question-type' - as for example between 'profession' questions

¹ Though it may be returned to later in a game

in Game 28. Although it is not usual for a questioner to persist with one question-type for more than two successive questions, examples of longer chains can be found - as in Game 31 for profession and Game 42 for nationality. It is also possible for successive tokens of such questions to work 'backwards' up a tree to find a correct property, as in Game 28 to find 'in Britain'.

A clear example of the third major strategic type is seen in Game 37, where an 'intuitive leap' is made directly from the search set of 'well-known woman, alive now' to the question 'Is it Margaret Thatcher?'. This erratic - but sometimes successful - guessing is particularly prevalent among beginners (but note that nearly all players first wrongly guess 'Is it the Queen' towards the end of the games for Princess Anne). Other, less overt examples of this strategy can be found in instances where a property is asked about that only makes sense as a 'reasonable' question if the questioner has hypothesized a specific game object. Thus in Game 3 the question 'Does she have a famous husband?', though on the surface redundant (most famous women's husbands being well known to the public), can be understood as reasonable if the questioner had at that point conceived of someone 'vaguely to do with politics' with a husband better known to the public than herself (say a particular politician's wife); probably she did receive useful information from the 'hedged' intonation of the reply - witness her persistence in this line of inquiry in the next question.

A case where a specific inference can be seen in conjunction with the third major strategy is to be found in Game 28, where the property 'shouldn't be involved in politics' leads (via 'not male') to the specific hypothesis 'the Queen'. In nearly all the games listed above there is some kind of hedged answer (whether by an expanded reply or simply by intonation) to a question as to whether the person is involved in politics; the number of people for whom a straight 'yes' or 'no' reply cannot be given to this question is presumably much smaller than the number of those for whom it can. Many more such specific hypotheses are probably made in the games than become overt in subsequent question sequences.

Throughout the games examined there would appear to be points where particularly significant information is received and/or particularly useful hypotheses are made by the questioner: these are points at which the search set (as defined by the conjunction of properties

on the current property list for the unknown object) is 'collapsed' - often to form a 'natural conceptual grouping' that corresponds to a single word or phrase - rendering certain earlier properties (particularly negative ones) redundant. Thus there is usually a point near the beginning of the game where the game object is assigned a class-membership property that for the first time renders it 'imageable'¹ (as does 'human' in the games above). But similar crucial points can also be found at later stages (e.g. when 'member of the royal family' is ascertained in these games). Properties falling between these crucial points - especially negative ones - seem to be subordinate to these principle class-membership properties and to play a less central role in the search processes involved in playing the game. Though there may be no direct way of proving this, reference can be made to evidence from 'recapping' after such points are reached, redundant properties tending not to be repeated there. It may well be that sets of properties corresponding to 'natural concepts' facilitate matching processes as compared to more haphazard bundles of properties. The former concepts (or the words labeling them) would presumably act as major 'addresses' for long-term memory searches and as such have general significance beyond the scope of 'Twenty Questions'.

Similar skeletal property lists can be presented for a number of games using two different game objects, as follows. Analogous remarks as for the Princess Anne games can be made.

'Forth Rail Bridge' Games:

G.38	G.32
mineral	mineral
~ found in all countries(?)	metal
in Scotland	used by people
~ belong specific person	~ used indoors
landmark	~ in the street
very large	~ in the garden
in Edinburgh area	in countryside
bridge	static
	~ pylon
	building/structure
	~ give shelter

¹ Thus presumably facilitating LTM search for token candidates

G.18

mineral
metal
~precious
functional
~many of
~one in the flat
larger than 2'x 3'x 3'
~like a dustbin
A-er surprised if Q-er bought
one
as big as car
~large container
~have wheels
~flat
in/near Edinburgh
bridge

G.27

mineral
movable (?)
~one in building
needed by humans in country
larger than briefcase
~found inside house
identity related to place
~more than one in Edinburgh
~Waverley Station
~in Edinburgh(clue)

G.48

mineral
~in room
~found anywhere
~found on street
~found indoors
found in countryside(?)
~exist in water
man-made
outside Edinburgh(clue)
by sea
in sea-side village(?)
village ~ mentioned in name
bridge
~Forth road bridge
~Tay bridge
within Scotland
~Kincardine bridge
on east coast

'Questioner's Nose' Games:

G.1

animal
human(?)
part of human
above waist
~whole head
only one of
nose
belongs to someone at Univ.
" " in Applied
Linguistics

belongs to male

" " without beard
~belong to A.Davies
~belong to staff
" M.F.
" member of MsC course
difficult to see (clue)

G.21

animal
alive
land animal(?)
mammal
found in Britain
domesticated animal
found in suburban homes(?)
found on farms (?)
human
~female
~have Britain-wide reputa-
tion
lives in Edinburgh
associated with department
member of staff
~high-ranking "
part of Q-er(clue)

(cont.)

G.23

animal
in the room
~sitting down(itself) (clue)
~on X
on Q-er
above waist
~below neck
~two of

G.35

animal
~got two legs
~male
found in this country
~domestic animal(?)
needs particular terrain(?) (~
mountainous)
~have tail
~got four legs
~insect
~got any legs
~s.th. like earthworm
~come out of habitat
~animal itself(clue)
~animal product
used by humans(?)
~whole item(clue)
~connected with clothing
~connected with furniture
A-er and Q-er have one
everyone have one (clue)
~hair

part of head

G.16

organ(?)

animal

in Buccleuch Place

in the room

human

~A-er

part of Q-er(clue)

above waist

~hair

An example of the 'top down', step-by-step strategy is seen in Game 18 and Game 32, where 'mineral' is followed immediately by 'metal'. A 'useful question-type'¹ is applied in, for instance, Game 13, where 'Is this part of a human being?' is asked immediately after the object is found to be human. Intuitive 'leaps' to specific hypotheses are found in Game 27, where it is asked whether the object is Waverley Station and in Game 48 where the questioner asks if the object 'exists in water', thinking perhaps of a ship (the former leap being to an entity, the latter to a class, of course). An example of how a player, though applying generally valid strategies can be led (or lead themselves) completely astray until help is supplied is seen in Game 35. Crucial 'collapsing' points are to be found at, for example, 'landmark' in Game 38, 'bridge' in Game 18, 'part of me' in Game 16, and 'nose' in Game 1. An instance of a very specific inferential 'short-cut' can be seen in Game 23, when 'not sitting down itself' leads to the inference (again in the mode of 'plausible deduction') that the object is part of a human being.

Any attempt to extend further the analysis of strategies employed in the playing of 'Twenty Questions' (in terms, say, of statistical statements concerning the order of questions) would probably be fruitless - and certainly would be tedious. Enough has been said, however, to show how complex and flexible - even without including 'extra-ludic' material - is the behaviour here being described, despite the simplicity of the game rules.

¹ Here of the 'binary' variety

Chapter 8

The present model is capable in principle of generating versions of 'Twenty Questions' in any natural language, given a suitable set of grammatical rules ('augmented' phrase structure and discourse-level) and a lexicon that includes information as to syntactic contexts for individual predicate lexemes in the language concerned. The implication is, of course, that the underlying cognitive procedures involved in playing the game are not language-specific - a not surprising statement, since the rules of the game are readily translatable from one language to the next. This does not mean, however, that the grammar and lexicon of the particular language employed will not affect the course of the game. There is, for instance, an obvious influence of the particular semantic scope of lexical items in a language used in a game question on the formulation of following questions. There are also cultural factors affecting the types of question asked (and, possibly, strategies preferred). An example of this first type of interaction is to be found in Game 25, played in Japanese. Having reached the point of knowing that the object was some kind of 'tabako' (which in Japanese can mean, besides 'tobacco', 'a/the cigarette(s)' or even 'a/the packet of cigarettes'), the questioner became confused when pressed to be more specific by the answerer. The object written on the slip of paper in the latter's hand was (in English) : 'the packet of cigarettes on the table'. The difficulty was evidently compounded by the tendency for the game to be played on Japanese radio with generic rather than particular entities as game object (a 'cultural' factor in turn related, perhaps, to the lack of articles in Japanese). Even when the answerer pointed towards the particular packet (almost empty) on the table in front of him, the questioner persisted with questions related to particular types of 'tabako'. When the point was finally grasped that the object was the packet on the table - 'tsukue no ue no tabako no hako' - an argument ensued as to the correctness of this expression, since it was not clear whether 'tabako no haka' could be used to refer to an almost empty packet. It was apparently not easy to express the concept of the container plus two cigarettes in Japanese succinctly, the fairly clear distinction in English (and Russian, for that matter) between a 'cigarette packet' and a 'packet of cigarettes' not being paralleled in that language in everyday usage (where the term 'tabako', however vague, is generally preferred). The text of the latter part of

the argument is given here with an approximate English translation:

- α: Filtā no tsuite iru tabako to iu koto?... (Do you mean a filter cigarette?)
- β: Sore wa kankei nai... Are wa nan desu ka? (That's irrelevant...
Asoko ni aru tabako no - ? What's that over there?
The cigarette - ?)
- α: Suisashi? (Butt?)
- β: Iie. (No.)
- α: Tabako no hako? (The cigarette packet?)
- β: Hako. (The packet.)
- α: Tabako no hako?... De mo, tabako no hako (The cigarette packet?...
to iu no wa - But a cigarette packet
is -)
- β: Matte - tabako mo haitte iru keredomo... (Wait - there are cigarettes
Kara no baai mo attya nai?... Chotto inside it but... But it cou-
aimai da kedo. Hito hako no tabako... ld also be empty, couldn't
it?... It's a little vague.
A packet of cigarettes...)
- α: De mo, ne, hako 'tte iu to katai mono... (But still a 'packet of
cigarettes' is when it's
packed full...)
- β: - iu keredomo, are mo hako ni naru wake - (But that's what it's ca-
nihongo de wa. Nai kara, fukoro to iwanai lled - that too is a
deshō... Fukoro 'tte ienai. 'packet of cigarettes' -
in Japanese. You'd hardly
call it a 'fukoro'.¹... It's
not a 'fukoro'.)
- α: Watashi wa tabako no tsutsumi 'tte iu. (I would call it a cigar-
ette 'tsutsumi'.²)
- β: Iie - iwanai. Tabako no hako 'tte ii- (No - you don't say that.
masu yo. You say 'tabako no hako'.)

Difficulties of a lexical nature were also encountered in translating the terms 'animal, mineral and vegetable' into languages other

¹ Bag, container

² Packet, wrapping

than English. Thus in Eskimo the term 'uumasq' is a present participial form denoting a living animal (not usually a human being, however); the convention whereby the term was to cover human beings, parts of human beings and also animal products (as in English within the context of 'Twenty Questions') had to be stressed to the players. This was somewhat easier to establish in the case of Russian, where it was possible to use a phrase of a less colloquial nature meaning 'from the animal kingdom'.

Occasions where questions are formulated in one of the non-English games that would not be expressible with ease in English are quite common - though in all cases a ponderous paraphrase could be asked in English (it is a matter of the succinctness of lexicalization of a concept in different languages). Thus in the Russian game, G.43, the question 'Eto kto-nibud iz moevo nachalstva?' (roughly: 'Is it somebody from my superiors?') uses the expression 'nachalstvo', a singular noun denoting any collective authority, and, in particular, one's superiors within an organization (here a university department). A similar point can be made concerning the Eskimo word 'qullersaq' in Game 10, which denotes anyone in a high-up position - usually referring to Danes in elevated administrative posts (up to and including the government and the royal family) as opposed to the Greenlanders themselves. It is a singular noun form with a regular plural and, unlike its Russian counterpart, cannot readily annex a possessive pronoun; semantically it seems to be a vaguer, more general term than the Russian. The same game also has a clear example of language-specific lexical ambiguity - that of 'nunami', which can either mean 'on land' or 'in a/the country' (whence the confusion in this game arising from use of the expression).

Grammatical influences on the course of a game (morphological and syntactical) are less easy to pinpoint (apart from the effect of the lack of articles in Japanese - as also in Russian and Eskimo - mentioned above). But undoubtedly such factors as the tendency to delete subject noun phrases in Japanese except when absolutely necessary for comprehension do have an effect on the course of the game. The former tendency, for example, allows questions to be asked and answered which are ambivalent as to particular or generic reference - something which is usually avoided in English by the use of distinct pronominals 'it', 'them', 'one of them', etc. Moreover, Japanese questions are nearly always ambiguous as to the number and sex of the referent. The subjective impress-

ion is that the resultant lack of referential 'clues' makes the game somewhat more difficult to play in Japanese than in English. The same may be said, to a lesser degree, for Russian and Eskimo.

Influences on the course of the game of a 'cultural' nature might be seen in the difficulty experienced by the Russian questioner in Game 43 in imagining someone 'higher than the government' or in the Japanese question in Game 28 as to whether the object's leaves fall off in autumn (a stereotyped question in the Japanese broadcast version of the game, apparently). But these are largely matters of speculation and of purely anecdotal interest.

Skeletal property lists as in Chapter 7 are given below for a number of analogous games in the three non-English languages. The 'logic' behind the order of successive questions can be seen to be similar to that behind the English games (i.e. compatible in a general sense with the question-formulating routine on page 166).

Eskimo Games

G.10 ('Queen Margrethe')	G.9 ('Questioner's nose')
uumasog (animal)	uumasog (animal)
nunami (on land)	~inuk (~human being)
neqit...-tortarpoq (eats meat, etc.)	inummiippoq (in/on human being)
~nasogarpoq (~have horns)	(clue)
timimi ilaatigut meqogarpoq (has hair on parts of body)	uumasup silataani (on outside of animal)
qallunaat nunaanni (in Denmark)	~niaqog (head)
~qitsuk (cat)	niaqumiippoq (in/on head)(clue)
~nersutaat (domestic animal)(clue)	qingaq (nose)
inuk (human being)	
pingaartumik atorfeqarpoq (has impor- tant job)	
arnaq (woman)	
qullersaat ilaat (a 'high-up' person)	

Russian Games

G.46('Questioner's nose')

iz zhivotnovo mira (animal)
 ~ sovsem chelovek(?) (~ exactly a
 human being(?))
 ~ zver (~ beast)
 chast cheloveka (part of human be-
 ing) (clue)
 ~ noga (~ foot/leg)
 ~ ruka (~ arm/hand)
 ~ sovsem golova(?) (~ exactly a head(?))
 ~ mozg (~ brain)
 ~ ushi (~ ears)
 nos (nose)
 ~ nos M.F. (~ M.F.'s nose)

G.43 ('Princess Anne')

iz zhivotnovo mira (animal)
 chelovek (human being)
 ~ v pomeshchenii (~ in room)
 (Q-er)znaet(?) (Q-er knows(?))
 ~ v laboratorii (~ in lab)
 ~ znakomy (~ acquaintance)
 izvestny (well-known)
 ~ v isskustve (~ in art)
 ~ po politike (~ in pol-
 itics)
 ~ russky (~ Russian)
 anglichanin (English)
 sovremenny (contemporary)
 ~ iz nachalstva (~ one of
 Q-er's superiors)
 vyshe " (higher than "
 (clue)
 ~ v pravitelstve (~ in go-
 vernment)
 vyshe " (higher than "
 (clue)
 v Anglii (in England)(clue)
 tsarstvuyushchaya osoba (ru-
 ler)
 ~ koroleva (~ Queen)
 ~ Prints Edinburgsky (~ Duke
 of Edinburgh)

Japanese Games

G.26('Questioner's nose')

dōbutsu (animal)
 ~kakōhin (~manufactured object)
 kono hen ni (in vicinity)
 ~irui (~clothing)
 ~shokuryō (~food)
 ~chorui (~bird)
 honyūru (mammal)
 chiisai(?) (small(?))
 katei ni(?) (indoors(?))
 ~inu (~dog)
 ~neko (~cat)
 ningen (human being)
 ~sei ni kankei (~to do with sex)
 karada no ichibubun (part of body)(clue)
 jibun de miru koto(kagami to)
 (visible to self(with mirror))
 ~senaka (~back)
 ~kuchi (~mouth)
 ~shita (~tongue)
 hana (nose)

G.25('Packet of cigarettes')

shokubutsu (vegetable)
 hana ga saku (has leaves)
 ōkii(?) (big(?))
 ~kudamono aru (~has fruit)
 ~aki ni ha ga ochiru (leaves ~fall in autumn)
 ~jōrokuju (~evergreen)
 ~onshitsu ni sōdatsu (~cultivated in greenhouse)
 Scotland ni mieru(?) (seen in Scotland(?))
 Nihon ni aru (found in Japan)
 ~tsukau mono (~utilitarian object)
 ~miru mono (~something to look at)
 ~taberu mono(?) (~edible(?))
 ~takai (~tall)
 tokaijū mita koto (found in middle of cities)
 koko de kau koto (can be bought here)
 ie no naka ni yoku (often found in houses)
 ~kyū ni fuyasu (proliferate rapidly)
 ~ueru (~planted)
 ~tsukue (~desk)
 bubunteki kami (partly paper)(clue)
 ~shinbun (~newspaper)
 miete iru (visible now)(clue)
 ~hon (~book)
 tabako (tobacco/cigarettes)
 ~tabako no shurui (kind of tobacco)
 tsukue no ue (on desk)

The claim that the cognitive processes beneath the linguistic surface of the game are universal may, though valid, not be particularly interesting in itself, but there is a deeper sense in which this comparative data - however limited in scope - has a bearing on fundamental linguistic questions. Namely as regards the propositional 'deep structures' represented on the model. There are two aspects to this: on the one hand constraints on the structure of such units, and on the other the nature of the elements of which they consist. In relation to the first of these, it can be seen from the diagrams in Chapter 6 that, despite the wide range of morphological and syntactic types of language modelled, the propositional content of all game questions asked conform to the basic (and presumably 'universal') logical structure of one, two or three arguments plus a predicate term (and various modifiers of these), reflecting the cognitive functions of property-attribution, class membership assignation, or action/state/relationship predication to an entity or between more than one entity. 'Entity' is here to be taken in its widest sense, at any level of abstraction between concrete particulars and quoted propositions (see Lyons, 1968, on first, second and third order nominals). Further constraints as to the extent of propositional embedding are also in evidence - no more than three levels are in fact found in the data (this is presumably a matter of short-term memory processing capacity).

These constraints apply just as readily in the case of such a proto-Indian language as Eskimo, whose polysynthetic morphology might be expected to blur over the distinction between predicate, argument and modifier, but this is not where language-specific effects are to be sought. Thus in such a 'word-sentence' as 'Niaqumiipoq' in Game 9 ('It's in/on the head'), the predicate is expressed by '-mii(t)', which just happens to be a verbalizing suffix rather than an independent verbal root as in English, but like its English counterpart requires two arguments: the logical subject, which is incorporated in the declarative third person singular ending '-poq', and the object (of location) 'niaqoq', a nominal root. Both the Eskimo and the English corresponding to it can be captured by a propositional 'deep structure' $X_1.P_1(X_2)$, where X_1 refers to the game object, X_2 denotes the head, and P_1 is a predicate of location (also representable as $Loc(X_2)$). The only significant difference is one of word-sense: the P_1 corresponding to Eskimo '-mii(t)' can

be glossed in English as both 'be on' and 'be in'. Thus a possible 'good question' following reception of the above proposition in an Eskimo game would be an utterance glossable as 'Is it the brain?' - which would not be a good question at an analogous point in an English game if the last proposition was 'It's on the head'.

Depending upon one's primary interests, one can either talk about constraints such as those discussed above as linguistic universals (in terms of the syntactic units of 'deep structures' corresponding to the propositional structures there) - and as such argue for their 'innateness' - or as universals of a more general cognitive kind. From the latter point of view (which is more relevant to the type of cognitive model with which this thesis is concerned), one can speculate as to the general 'set' of the central nervous system to recognize and utilize - in memory storage and search and in the analysis of incoming sense data, for example - such propositional structures (cf. Whitehead's broad use of the term 'proposition'). This 'universal' propositional base is, it should be pointed out, largely taken for granted by cognitive modellers in Artificial Intelligence (however it is interpreted by individual theorists) and by many psycholinguists (cf. Anderson and Bower, 1973, and Kintsch, 1974, for example). Constraints on the structure of such propositions would in turn constrain the type of linguistic syntactic structures corresponding to and expressing them (and the type of rules applicable to them for expansion into surface utterances).

Be this as it may, it is clear that there is considerable interplay between the language-specific and the language-independent in this area of verbal behaviour (as presumably in all others) and that any model that - albeit by necessity - has to draw a precise line between the two is to some degree misleading. But nevertheless, the set of language-independent instructions defining behaviour conformal with the rules of the game can be described apart from any reference to particular linguistic expression within a given language. The computational analogy of a program formulated in and acting upon units of a propositional 'language' such as LISP is of value here. However, the analogy is not to be taken too literally - especially in so far as an entirely different type of processing (by 'analogy' rather than 'list-matching') may also be involved in the playing of 'Twenty Questions' (in relation, for example, to strategy (ii) discussed in

Chapter 7).

As regards the second aspect of this question of universal propositional structures - that of the conceptual elements (arguments, predicates, modifiers and operators) of which they consist - the model treats these as word-senses, as do the majority of Artificial Intelligence theorists, tacitly or overtly. The alternative to such a position would be to treat them as constructed of 'primitives' from a finite universal set (cf. Schank, 1972). Decomposition (for analysis and storage) into structures of this sort might arguably be involved in certain types of cognitive tasks, but a word-sense-based system seems justified for accounting for the behaviour in our data.

But what sort of evidence can be adduced for word-senses rather than more primitive semantic units being crucial for modelling 'Twenty Questions'? We have already discussed a few examples of how specific word-senses in a given language can influence the choice of subsequent game questions. It is, furthermore, easy to find occasions in which certain connotations of words or phrases (difficult to reflect in any discrete feature-breakdown, the meaning of the whole being greater than the sum of any set of - usually binary - features of this kind) clearly influence the subsequent course of a game. An instance of this is the use of the words 'znamenity' and 'izvestny' in the Russian game 43. The former term corresponds roughly to English 'famous', the latter to 'well-known'. The difference between the two is not easily represented by the addition or subtraction of one or more simple feature(s) from a finite set (of general application in the lexical analysis of Russian), yet it is clearly relevant to the course of the game:

β: Eto znamenity chelovek? (Is it a famous person?)

α: Izvestny... (Well-known...)

β: Izvestny. No - izvestny v oblasti iskusstva? (Well-known. But - well-known in the field of art?)

'Znamenity', like its English counterpart, would seem to suggest someone renowned for some outstanding feat and/or of - in some sense - historical stature, whereas 'izvestny' is both somewhat weaker and suggests renown in a certain field. The combination 'prostoy no izvestny' ('simple but well-known') occurring later in the game is not as contradictory as 'prostoy no znamenity' would have been. 'Cultural' connotations of the Russian word 'prostoy' are also involved here, the game object being Princess Anne.

Apparent evidence for a primitive analysis being relevant to the present data is found in the relexicalization present in many 'recaps'. Throughout the corpus can be found instances where the questioner recaps previously elicited propositions about the game object with somewhat different lexical items or phrasing, recalling, for instance, 'It's static' as 'It doesn't move' (Game 32), or 'She's not a politician...' ¹ as 'Perhaps vaguely connected with politics' (Game 3), or 'It's not something we use in the house' as 'Not used in the house' (Game 36). But these can be explained in other ways than by resorting to primitive representations: in the first example the property concerned might well have been stored (in component (c) of the model) in the form of phonemic tokens of the lexical items 'not move' - i.e. the replacement of the more technical term by its more colloquial (and in search and match processes more readily manipulable?) paraphrase might have taken place at the time of memorization. Similarly, in the second example, where the hesitation accompanying the elicitation of the proposition would have necessitated some modification of the latter before it was stored anyway. Such purely syntactic variation as exhibited in the third example are compatible with the model already, since it is assumed that only the 'key' words are stored in (c), and that the lexical case frames for the predicates involved allow for a number of such (transformationally) related syntactic constructions. The cognitive activity involved in matching new information to properties already stored for the game object and in deriving implications and hypotheses from them could doubtless cause various modifications to that information before it is actually stored. Finally, mistakes in or difficulty of recall will inevitably cause the recapper from time to time to reconstruct propositions somewhat at variance with (or even the opposite of) what was actually stored.

At this point we must distinguish between two different aspects of the 'primitive' question. On the one hand there is the question of lexical decomposition being or not being involved in the processes we are modelling; on the other hand there is the possibility of 'primitive' or 'general' predicates underlying a variety of language-specific surface predicates expressing the same basic idea (with

¹ From the sequence 'Is she a politician?' \Rightarrow 'No... I'd say not.'

various additional nuances of meaning). This second aspect can be examined by comparing different ways of expressing the same underlying 'primitive' or 'general' concept in the English games (not enough data being at hand for the other languages). Take for example the following questions found in the corpus:

G.4: Does it have any functional value? Can you use it?

G.40: Is it decorative? Is it functional?

G.27: Is it something which is useful to... humans...?

G.32: Does one use it? Is it an object which is used?

G.28: Is it useful?

G.35: Do human beings do anything with it - do they use it for anything?

G.18 and G.36: Is it (something) decorative?

G.36: Is it functional in any way?

G.12: (Is it) of use or decoration?

Clearly all these questions are concerned with whether the object serves some kind of utilitarian function - the contrast being either with 'useless' or 'decorative' (it is not clear whether these represent non-gradable opposites of 'useful' - cf. Lyons, 1977 - or indeed whether the latter two terms even form a binary dichotomy; but at least in the present context they are certainly treated as 'first approximation' binary complementaries). Whichever contrast is involved (and especially when a 'no' answer to questions as to whether the object is decorative is received) the information gained by such questions is decidedly vague unless helpful hedges are supplied by the answerer. In the game of 'Twenty Questions' one can see time and again the natural propensity of the human mind to deal in binary contrasts (a propensity related to the 'top-down' strategy described in Chapter 7) even when a little reflection would show that no such clear dichotomy exists. Some of the questions listed above are merely stylistic variants, and at least one (Game 12) is not a legitimate game question (though it is aimed at gaining the same information as the others), but the examples involving rephrases of the question (as in G.4 and G.32) seem particularly strongly to suggest that there is some underlying conceptual property being asked about which can be lexicalized in a number of different ways. Presumably the first variant in such cases is judged in retrospect to be too vague - or misleading - or not sat-

isfactory stylistically. One could then propose an underlying general concept 'USE' (pronounced as the English noun), which 'points towards' a number of different lexical items, principally the adjectives 'useful', 'functional', 'useless' and 'decorative' (the latter two as -in some sense- antonyms of the first two). Moreover, USE would have to be related to the English nouns/noun phrases 'use', 'functional value' and 'decoration', the verb 'use' and various syntagms such as 'do something with', 'have a functional value', etc. Variants of these could be related to syntactic options on the 'case frames' of the predicates involved, for instance the following related to the verb 'use': 'Does one use it?', 'Do they use it for anything?', 'Can you use it?' and 'Is it an object which can be used?'. If on the other hand one analyses the 'deep structure' of each of these sentences in terms of (English) word-sense-specific predicates - thus, for example, 'X1.P1 (= functional)' for G.40, 'X2 (= one).P2 (= use)(X1)' for G.32 (version one) and 'X1.ε(X2 (= object))_{X2.P2}' for G.32 (second version) - it is going to be difficult to account for such semantic similarity as does exist between successive lexicalizations here. An underlying 'X1.USE' embodying the conceptual 'primitive' hypothesized might thus be justified. The problem arises, however, of specifying the exact semantic nature of this underlying element: is it really a predicate? If so, is it a property, an action or a relation? Does it constitute a second or third order entity? Surely all human symbols must have some specific relationship to such major ontological categories. And the transformations (in the widest sense of this word) necessary to get from an ontologically neutral concept embracing all the former to specific English words would be exceedingly complex, especially since it is a question of generating whole syntagms, not just individual nouns, verbs or adjectives.

The most satisfactory - and simplest - solution would seem to be one that combines the two approaches discussed above: let us accept that there is a general concept 'USE' related to a number of English lexemes¹. Let us assume that it has ontologically 'neutral' denotation (functioning as a symbol, however, it could presumably act as either a predicate/relator or a higher order entity as the case may be) and that

¹ And perhaps also involved in marking the 'function' of concrete entity types (i.e. 'what a thing is for')

it is incorporated in the non-language-specific question-formulating routine for D2(page 166) by virtue of indicating one sort of 'useful question-type' according to strategy (iii) in Chapter 7. The activation by the routine of the corresponding question-type (ASKIF X1.USE) will result, according to this theory, in the generation of one or another of the questions listed above - if at that point in the game in progress it is not yet known whether the game object(an animal, mineral or vegetable product)serves any utilitarian function at all. Once that is known, the same question-type involving 'USE' can be activated to generate questions about more specific kinds of function. The point here is that this general concept USE is not directly linked to an array of English predicates and nominals, but is a conceptual variable that can be utilized in 'Twenty Questions' as a 'tree' for relating specific functions/uses hierarchically below it(e.g. 'is for drinking from', 'is used as furniture' - or indeed 'is for decoration' discussed above¹). How the variable is bound in order to generate a question will depend in part on the course of the game up to that point. It is the stage after this in the generation of a question² to which the diagrams of the model correspond.

The particular lexical predicate plus case frame activated in this way(say that for the English verb 'use')will itself contain various alternative syntactic patterns(common syntagms), one of which will be selected, presumably, according to stylistic/thematic factors and to the other elements(arguments and modifiers)requiring expression. Such factors would influence the choice of, say, an active over a passive form of the verb. On this view the general concept USE does not bear its own 'case(or predicate) frame' - these having the purely linguistic function of correlating semantic arguments with surface syntactic slots. The exact type of processing whereby activation of the former concept in the early stages of the generation of a question in turn activates a particular English lexeme(say the adjective 'functional' or the verb 'use')is no doubt a complex matter, but there is no reason to suppose that the selective activation of one such predicate and its

¹ The top-most node of the 'tree' may there have been skipped(the object being presumed generally useful)and a binary contrast sought.

² Where the question-formulating routine has already activated a specific English lexeme corresponding to a particular binding of the 'primitive' variable

frame(or suppression of all other potential candidates) will depend partly on the 'set' of the speaker(whether determined by ideolectic/stylistic habits of expression or by the form of closely preceding utterances)to formulate,say,a question beginning 'Is it(+adjective)' or 'Does it(+ intransitive verb)' or 'Does/can one (+transitive verb)',some lexical items being compatible with such 'sets',others not.Some degree of random variation of near synonomous constructions can be expected to enter here too - as can the involvement of whole stereotyped questions.Though simulation of such processing is theoretically possible,it is well beyond the capacity of any speech-generation program to date(including that accompanying the present model).

Other sets of related questions drawn from the data can be compared in order to extract other 'general concepts' corresponding to 'useful question-types'.Thus,for example,for an underlying concept we can call 'PROCESSED'(as opposed to 'NATURAL',which it includes in the same sense as 'USE' includes its 'opposite' 'USELESS'):

G.36:Is it a product?

G.36:Does it need to be processed before we have it?

G.41:Has (the mineral) been through any sort of process?

G.13 and G.14:Is it in its natural state?

G.19:Is it a product for consumption?¹

G.23:Is it a man-made object?

G.23:Is it a manufactured object?

Or for an underlying 'PROFESSION'(all well-known people are,note,presumed to have a profession,so only specific ones are asked about):

G.3: Is it someone connected with academic circles/the acting
profession/politics?

G.37:Is she a celebrity of showbusiness?

G.37:Is she involved in politics?

G.42:Is she a political figure?

G.42:Is this person's occupation in the field of entertainment?

G.42:Is it a sports personality?

G.28:Is this person involved in politics/entertainment?

G.28:So it's (a woman) who's involved in sport?

¹ A more specific binding of the same 'general concept'

Or for (typical) 'LOCATION':

G.4: Could I see it in this country?

G.45: Is it something to be found in Scotland?

G.23: Would one find it normally inside a house?

G.35: Do you find it in the country?

G.36: Do we see it (every day) around in the streets?

G.23: Would you normally expect to find it in ~~the~~ street?

Or for 'KNOWN'(to speaker):

G.31: Is it somebody known to me by name?

G.31: Would I know this person by virtue of their office?¹

G.37: Do you or I know her personally?

G.11: Do we know it? Are we acquainted with it(I mean) ?

Or for 'STATIC':

G.41: Does it stay in the same place?

G.27: Is it movable?

G.40: Does it move about?

Or for 'CONSUMABLE':

G.36: Is it something we eat?

G.19: Is it a product for consumption/for eating?

G.19: Is it for drinking/smoking?¹

G.7: Could you normally eat it?

G.27: Is it edible?

G.5: Can you eat it?

G.5: Is it something you drink? A kind of drink?¹

Many more such 'general concepts' relating to 'useful question-types' can be found in the data, some of which can both be regarded as independant 'trees' or as lower levels of other more general ones - thus 'CONSUMABLE' in relation to 'USE'. This is not an embarassment to the model, however, as these 'trees' are not taken to be permanent, finite structures, but are to be seen as constructs produced by applying the question-formulating routine to the long term memory conceptual system as the game proceeds, utilizing natural associations from 'general concepts' represented there to move to more specific (relevant) concepts that could be asked about as properties of the game object.

¹ A more specific binding of the variable concept

Thus at a certain stage of a game application of the 'useful question-type' concerned with USE to the LTM structure corresponding to the current search set might lead to the concept 'CONSUMABLE'(itself another 'useful question-type'), which in turn will be treated by the question-formulating routine as a 'tree'.

To return to the original question regarding 'primitives' as opposed to 'word-senses'. Although semantic 'primitives' in the sense of 'general concepts' may well be involved in the early stages of game question generation, as discussed, it has been found preferable to base the model on word-sense-based propositions (as in the diagrams of Chapter 6). A number of reasons can now be brought forward to justify this. Firstly, it would seem likely that there are different ways in which a given proposition can be generated by the question-formulating routine, given the intermeshing of strategies embodied in it. Thus a proposition resulting in the English utterance 'Is it decorative?' might derive, as described, from a 'useful question-type' involving the 'general concept' USE; or it might be already stored there as a fully-fledged 'useful question' (along with information as to suitable contexts of application); or it might be 'read off' a particular candidate concept (type or token entity) hypothesized as likely to be the game object¹; or it might be 'read off' some higher-order concept address corresponding to the current search set (say 'manufactured object') by virtue of its dividing that search set roughly by two. All we can be fairly confident of is that at some stage in the generation of that utterance (whether as a 'deep structure' or as a description of a sequence of production processes) a proposition corresponding to a bundle of English word-senses (including that of 'decorative') must be involved.

Secondly, even if primitives in the sense of 'general concepts' are involved in the generation of game questions, they are not necessarily involved in the corresponding afferent processing (for comprehension) by the hearer². Word-senses represent fully the propositional information being conveyed (asked about) in the game context, and any afferent processing that attempts to reconstruct the derivation

¹ The predicate 'decorative' being activated without the intermediary of the concept USE

² And there is no evidence that analytic breakdown into 'primitives' in the sense of 'universal semantic features' is involved in such processing in 'Twenty Questions'.

of the proposition from a more 'primitive' stage is redundant, not² increasing the useful information content extracted.

And finally, there are more or less subtle differences of meaning (and hence of the implications of a subsequent 'yes' or 'no' reply) between related but differently formulated questions, differences that go beyond mere stylistic variation. Thus, for example, in Game 23 between 'Is it a man-made object?' and 'Is it a manufactured object?', the proof that they are felt as differing in semantic scope being that they are both asked by the same player in the same game as separate game questions. Similarly for the two questions of USE in Game 35, of PROCESSED in Game 36, and of KNOWN in Game 11. Even when near-synonymy is involved, the fact that different lexemes tend to enter into specific syntagmatic combinations (requiring 'selection restrictions' on objects, for example) can have an important bearing on the game - thus a 'no' answer to 'Am I acquainted with her' (cf. Game 11) would tend to rule out fewer candidates than a similar answer to 'Do I know her?', since the former is usually limited in use (in the sense of knowing a person) to people known personally as opposed to by hearsay, fame, etc. Such useful information would not be capturable if word-senses were somehow bypassed. The same arguments can be made - with even greater force - for games played in different languages, where the introduction of the same 'general concepts' (USE, PROFESSION, LOCATION, etc.) appears to be justified and yet for which word-sense-based propositional modelling is just as adequate for our purposes as it is in English.¹ In sum, 'primitives' - at least in the sense of 'universal semantic features' - would seem to me to be no different in fact from word-senses of more 'basic' lexemes (active, no doubt in the acquisition of new vocabulary, for instance) to which more complex word-senses may be related by 'definitional' propositions stored at their 'addresses'. That this kind of information connecting lexemes amongst themselves must be stored - or recreatable - somewhere in the system is not denied; its involvement in particular types of cognitive processing is,

¹ And it is at this level of word-senses that a weak form of the Whorfian hypothesis of the influence of language on thought seems appropriate.

² And an efficiency argument could also be adduced, since words - phonemic forms addressing word-sense concepts - are presumably the most concise means the mind has of memorizing property lists, etc.

however, open to question.

One last matter which must be touched upon in this section on 'universal' propositional constituents concerns their representation - and particularly that of the 'logical relators/operators' included among them. These latter are, essentially, ' \sim ' for negation, '=' for identity, and ' \in ' for class membership ('Loc' being simply shorthand for a special group of predicates such as 'in' and 'on' in English); all three are found necessary for modelling games in all the languages used. Unlike the various 'P's and 'X's and 'j's, these constituents are, it would seem, entirely universal and language independent, though they correspond to various surface markers whose word-senses they can be said to represent¹. Their developmental evolution from pre-verbal operations can be traced (cf. Inhelder and Piaget, 1958, and Vygotsky, 1962) and their independent psychological reality need not be doubted. The only question here is as to the nature of their representation in stored propositions (or verbal 'deep structures'). Presumably this could be a matter of either language-specific word-tokens (e.g. 'not' or 'no', etc., for negation in English) or of more abstract 'pointers' towards specific operations to be applied to the propositions to which they are attached (e.g. antonym or implication generation) - involve, that is, real 'operators' as opposed to static symbols. The solution embodied in the present model is probably the most neutral as to such interpretational possibilities - certainly the use of the three universal logical symbols simplifies the representation of standard propositional patterns encountered in all four languages. But, as mentioned in the introduction to Chapter 6, all the propositional symbols on the model are regarded as metalanguage labels for either tokens (in any sensory modality/coding) of entity/action/property types, etc., or of phonemic word forms symbolizing the latter, the implication being that this is the form in which propositions are stored in component (c) on the model. The whole question of the encoding of propositional 'deep structures' in memory (in as far as this has any meaning at all) is of course a highly controversial one. In general, however, it can be stated that the nature of stored representations of meaning and the processes whereby such meaning is extracted and

¹ In Russian, however, both ' \in ' and '=' commonly correspond to \emptyset in the surface utterance.

acted upon are two different issues. Logical operators may belong to the realm of the second issue, either not being represented in stored structures at all (when the relations ' \neq ' or ' $=$ ', for example, between terms in a propositional bundle can readily be inferred on semantic grounds), or being represented - e.g. in the case of ' \sim ' - by phonemic word or morpheme tokens, as for all other propositional terms. A similar argument can be made for such 'modifiers' as those for number, tense and mood: they can be regarded as logical operators symbolized in stored forms by phonemic elements (when not deducible as needed from context)¹.

This point of view is clearly different from that expressed by Fodor in his influential book The Language of Thought (1976), whereby propositions, whatever their source, are converted into neutral 'Mentalese' representations for storage. A critique of this view, arguing for a clear distinction between experientially meaningful 'brain codes' and human language based on arbitrary symbols - as opposed to ~~one~~ experientially remote 'language' (or, rather, hypostatized metalanguage) of mental concepts in which all 'meaning' is encoded - is presented in a forthcoming article by the present writer.²

¹ Their semantic scope is, moreover, to some extent language-specific; for example $X_{\{pl\}}$ in Japanese commonly means 'X and other such things' - and cf. the various types of conditional relationship in different languages corresponding to the symbol 'cond' in our metalanguage.

² Fortescue, M.D. (to appear). 'Why the 'Language of Thought' Is Not a Language'.
University of Edinburgh Linguistics Department: Work in Progress

Chapter Nine

It is notoriously difficult to justify cognitive models purporting to account for anything approaching the complexity of natural speech behaviour through standard paradigms of quantitative experimental design. The attitude taken by the majority of Artificial Intelligence theorists implementing such models is that for the present at least it is better to ignore the question of 'internal' psychological reality and concentrate on producing models that actually do simulate the external behaviour under study. General criteria for model-building - maximal simplicity and explanatory power - are all that need be considered. The position of the linguist is analogous, though he is generally more concerned with basing his models on maximally general rules derived (when not from his own intuitions) from a corpus of data. The psychologist of language, on the other hand, is concerned that predictions deriving from his models should be testable experimentally. These three approaches to cognitive modelling are by no means incompatible in theory, as some would claim (cf. Winograd, 1977), and there is every reason to believe that a common methodological paradigm for such research is in the process of coming together. My own contribution towards this end, as embodied in this thesis, is an attempt to show the feasibility of applying such a methodology to a clearly defined area of speech behaviour to produce a model that can at least go part way towards countering criticisms levelled at cognitive modelling as mere 'ad hoc speculation'.

One central criterion in this methodology is simplicity, but it is essential to avoid a certain type of spurious simplification gained by incorporating maximal generalizations into one's model deriving from one sub-component area in isolation (i.e. some abstract analysis of that area within a particular discipline)¹. It is often the case in modelling complex behaviour that requires the interaction of a number of distinct components that greater simplicity in one sub-component leads to greater complexity in others or in interfaces between components. What is essential is overall simplicity. A case in point may be transformational relationships between sentence types: whilst making maximal generalizations in the area of abstract sentence grammar

¹ This is different from the spurious simplicity caused by basing a language model on a handful of (artificially thought up) sentences.

their integration into a full-scale discourse generation model would appear to complicate utterance-production considerably. The interfacing between demons (and discourse-level rules) and the speech generator on the present model, for instance, already determines the ordering of syntactic constituents to be generated in a maximally simple way.

The model has been built up in Part One on linguistic grounds (distributional, formal and functional) from a large corpus of recorded material, and its further elaboration in Part Two has been guided by criteria of overall simplicity and psychological plausibility; it can at least be said that it does not run blatantly counter to recent quantitative psycholinguistic evidence for the nature of the various processes involved, as presented in such works as Fodor, Bever and Garret (1975) and Clark and Clark (1977). What remains to be done is to show that, on the one hand, the rules derived from the data in Part One can be used to predict (qualitatively rather than quantitatively) further data elicited from a new group of subjects, and, on the other hand, that a simplified version of the core of the model is amenable to simulation on the computer¹.

The first part of this two-pronged attack aimed at (partially) justifying the model was designed to show that two typical realization rules derived in Part One could also account for new forms elicited for the discourse acts concerned (and also to show incidentally that my own intuitions as to 'what is going on' behind such sequences is much the same as other people's); it was undertaken in the following manner. Twenty subjects (who knew the game but had not participated in the original recordings) were given truncated transcripts of seven of the original games and asked to supply in written form what they thought the next utterance might have been at the point the text cut off in each case. Half of the subjects were told that the next utterance would constitute some kind of objection or request for a rephrase²; the other half were not restricted in their choice of subsequent utterance type, so long as what they wrote was stylistically

¹ It is reasonable to suppose that further aspects of the model will be testable in a quantitative sense as suitable experimental paradigms develop; specific implications of the model are certainly falsifiable.

² Which it always was in the original games. A range of contexts was selected to elicit a variety of realization types for the acts.

suitable and read as a natural continuation of the spoken dialogue. The prediction was, of course, that the new data would match well with the rules derived from the original game corpus for Object and Request Rephrase.

With both groups a certain percentage of the elicited (written) utterances were not tokens of either target act, being realizations of Answer (or blends of that act and others also listed in Part One); the majority of these were produced by the non-restricted group. They are not included in the results tabulated below: since in all cases a Game Question (or a recap preceding one) had just been made in the texts, such responses can be seen to conform with the response set rules of Part One. It can be assumed that in these cases the test subject simply didn't recognize that activating conditions for one of the two target acts had in fact been met - such oversights also occur frequently in the original game corpus. Utterances by subjects from the non-restricted group are underlined below; a '*' indicates an utterance that is clearly a blend of the two acts involved, analogous to the cases found in Part One, where the activating conditions for both acts are recognized as simultaneously pertaining - i.e. that a game rule or conversational principle has been infringed and, on the other hand, that the situation can be remedied by a reformulation of the utterance concerned. The last utterance of the text given the subjects (in brackets) plus the actual following utterance in the original transcript are stated at the top for each text:

G.13

(Is it so small that, given the fact that it could be eaten, you could eat it in one mouthful?)

You've already asked that, didn't you? Didn't you say that?

Object:

Look, we've had that one before.

I've already said you could.

But haven't you asked that one already?

You've already asked me that.

I think I've answered that question before, haven't I? Ask me another.

Yes, but I've already answered that question.

You've already asked that and I said yes.

You've already asked that.

I've already answered that one.

You already asked me that.

Request Rephrase:

Er,well,I think I said you could eat it in one mouthful,what do
you mean by 'small'?

G.49

(Is the mineral - ?)

I didn't say mineral.Animal and vegetable.

Object:

It's not mineral.

*It's not mineral.Would you like to rephrase your question?

No,there's no mineral involved.It's animal and vegetable.

When did I say anything about mineral?

There's no mineral - it's animal and vegetable.

Remember,I said it was animal and vegetable.

I've already told you it's not mineral.

It's animal and vegetable.

It's not mineral,it's animal and vegetable. (X2)

Not mineral,animal and vegetable.(X2)

It's not mineral.

Is it mineral at all?

It's animal,not mineral.

I said 'animal and vegetable'.

No mineral.

It isn't mineral.

Request Rephrase:

Could you repeat that?

G.32

(It's static.It's not something like an electricity pylon?)

What do you mean 'like an electricity pylon'?

Request Rephrase:

Like an electricity pylon in what way?Size?Colour?Shape?

How do you mean 'like an electricity pylon'?

Is that a question or a statement?

Are you asking if it is an electricity pylon?

Do you mean 'is it an electricity pylon'?(X2)

What do you mean by 'something like an electricity pylon'?

What do you mean by 'something like'?

G.1

(Is it part or whole of a human animal?)

We have to rephrase the question according to the game.

Request Rephrase:

Would you like to choose first?

Mm.What do you mean by 'a human animal'?Is that a generic or a
specific?

Which one do you mean?

Which are you asking me?

Which are you asking me?I'm only allowed to answer yes or no.

Which question are you asking me?

Which part of that question do you want me to answer?

Object:

*You can't ask either/or questions,which do you want me to answer?

*That doesn't let me give a yes/no answer.Could you ask that ques-
tion again so that I can give a yes/no answer.

G.4

(And you said it has no specific function or purpose,therefore some-
thing decorative -)

Yes I did.I said that it had a function,very much so.

Object:

I said it has a specific function.

No,it isn't.

I said it did have a functional value.

No,no.I didn't say that.I said it was used for some function.

I didn't say that.

Did I say it had no specific function?

I didn't say it had no specific function.

No,I didn't say that.I said it does have a function.

I didn't say it doesn't have a specific function.

I didn't say that. I said it's a specific object, and it has a functional value.

No, it has a function.

No, it does have a specific function, but it's also decorative in a sense.

That's not what I said.

I didn't say that it has no function, although it could also be regarded as decorative in a way.

I never said that.

I don't think I said it doesn't have a specific function.

Um. I don't think I said it had no specific purpose.

Request Rephrase:

Are you asking whether it's decorative?

G.27

(Is its specific nature related to a human or to a place?)

Can you rephrase that question?

Request Rephrase:

I'm not sure what you mean by related to...

You'll have to rephrase that a bit.

What do you mean?

Which are you asking me?

You'll have to ask that again so that I can answer yes or no.

Object:

*You can't ask that, you have to ask one or the other.

I can't answer that, can I?

*That's two questions in one, isn't it? How about rephrasing it?

*I don't follow.

I can't answer that.

G.34

(Is it made of some sort of - transformed animal product?... Or is it some direct animal product like a skin or a horn or something of that sort?)

Which question are you asking me?

Request Rephrase:

Er, well, that depends what you mean by 'product'. Could you be more precise?

What are you asking me?

*Well, you'll have to make that question a bit more straight-forward, because I can only answer yes or no and that's an either/or question.

*Look, just ask me one question at a time and I'll answer 'yes' or 'no' - remember the rules of the game!

Which question do you want me to answer?

Which question do you want to ask?

I'm only supposed to answer yes or no - which question do you want to ask?

Which question do you want me to answer?

I think you'd do better to avoid concepts such as 'transformed'.

Object:

*How can I sort all that out?

These can be reduced to the following formulae comparable with those in Chapter 5 (pages 87 - 92)¹. A number of the elicited utterances can be regarded as stylistic/ideolectal variants upon realization formulae already stated in that chapter; thus 'How do you mean-' corresponds to 'What do you mean - ', and 'In what way - ' to 'What way-'. These need not concern us further - nor need such optional elements as 'Look' introducing an objection or blends of known formulae with content representing an Answer.

Object formulae:

(('No'+)('Look'+) STATE p(grounds for objection)(+Req. Conf.)(+Justify Self)
Req. Confirm. p(X state prior proposition contradicting present one)
 ASKWh 'when'+ 'I'+VP(say, etc., expression objected to)
 ASKIF p(proposition of X's objected to)
Comment (jocular -on X's previous utterance)
Express Difficulty

Request Rephrase formulae:

ASKWh 'what'+ 'you mean', etc. (+ 'by'+ NP)(+Justify Self)
 ASKIF 'you' + 'mean/ask', etc. p(hypothetical rephrase of X's utter.)
 ASKIF 'you'+ 'could/would', etc. +VP(rephrase, be more precise, etc.)
(Echo +) ASKWh 'In what way'(+ ASKEI/OR)

¹ They include the more indirect forms to be discussed below.

ASKEI/OR p_1/p_2 (force behind X's utterance)

STATE 'you'+ 'have to', etc. + VP (rephrase, etc.) (+Give Reason)

ASKWh 'how about' + NP (rephrasing, etc.)

STATE 'that' + 'depend on' p (meaning of X's utterance)

IMP p_1 (obey rules, etc.) + STATE p_2 (answerer respond to X's question, etc.) (+Remind (of rule))

Propose Action (resulting in rephrase)

There was no particularly significant difference between the realizations produced by the two groups (apart from the greater percentage of Request Rephrase and Object - as opposed to Answer - tokens elicited from the restricted response group), although it can be seen that the texts for which the non-restricted group produced the most Object tokens were the ones in which a clear contradiction had just been made. The similarity of response realizations between the two groups for these cases (Game 4 and Game 49) appears greater than for texts where the objectionable nature of the preceding utterance is less obvious.

We must now examine those indirect realizations with no exact analogue in the original data and show, as in Part One, how a system implementing the model could compute the force behind them from local context and general conversational principles. It will be seen that a function common to most of these instances is that of reminding the questioner of something constituting grounds for an objection by causing him to search in memory for a proposition corresponding to those grounds. We start with the indirect tokens of Object:

G.49 P: When did I say anything about mineral?

This utterance can be taken - according to its form and content - to be a token of Request Information until/unless an ulterior function can be found to match it. In responding to it as such, the hypothetical hearer (X) would search in memory for the answer and there find the absence (and contradiction) of a proposition corresponding to the presupposition of his own last utterance. At the same time (as in the 'What's it made of?' example in Chapter 5) he would presumably be attempting to ascertain the ulterior intended force of the utterance, since he would have been normally expecting a token of Answer to follow next (or, more immediately, zero, as he hadn't finished his own

utterance yet), which this, by form and content, could not be. Nor could it be a direct Request Information, since it is highly unlikely in the game context that β should want to elicit such information for his own ends. Discovering his own presupposition failure, α would recognize that the activation conditions for Object - one of the acts potentially expected by the Meta-frame - had been met and that therefore β 's utterance was a plausible indirect realization of that act: it could be recognized as a possible way of causing α to see his own mistake and correct it. There may be a case for regarding this formula with its typical intonation contour as a conventional realization of Object, but having encountered no other token of it I have not done so here.

G.49 β : Is it mineral at all?

This case is almost exactly parallel to the preceding, being a Request Information by form. The 'at all' (which would be introduced by a discourse-level rule) indicates a certain kind of (presuppositional) contrast, and has much the same force as contrastive stress on the 'is' would give.

G.4 β : Did I say it had no specific function?

This case too is similar to the first, but here the utterance follows (interrupts) a Recap rather than a Game Question; as before it cannot - by form or content - constitute β 's expected next game move (i.e. an Answer following α 's still unasked Game Question). It is conceivable that the utterance might have been intended as a direct Request Information in this case however (for example if β suspected that he might have given α false information earlier). But since the Meta-frame 'expects' objections in contexts such as this, α would check whether the utterance matched the output of that act - which it does - before falling back on the interpretation of it as a neutral Request Information. Intonation, and the fact that an interruption of the game exchange has been committed, would doubtless facilitate the computation of the utterance's force here.

G.34 α : How can I sort all that out?

This probably constitutes a realization of Express Difficulty, which is already marked on the rule in Chapter 5 as a conventional (if indirect) realization of Object. It represents, however, a rather indirect token of the former act in turn. Moreover, it can also be regarded as

a (blend with) Request Rephrase, since α in all likelihood would have intended eliciting a rephrase in uttering it (if he had been in a real game situation). Whichever way it is treated, it is evident that (as for indirect realizations of this sort in general) the utterance does not match the most expected act at that point - namely an Answer -, and at the same time is unlikely (by content) to constitute a direct Request Information on α 's part; β presumes that α is obeying the conversational principle of being relevant. The utterance, once recognized (by intonation and content - it refers to the action α is having difficulty performing) as an Express Difficulty, can be related according to their realization rules to one or both of the two 'expected' Meta-frame acts we are concerned with. Performing his game move Answer constitutes α 's overriding motivation in the game context, and the most likely thing to have prevented him from being able to do so is that β has broken some conversational principle (not being clear) and/or a game rule (asking a non-yes/no game question).

Turning now to the tokens of Request Rephrase we find the following anomalous utterances:

G.32 β : Is that a question or a statement?

By form this is a Request Information, and α , while searching for β 's ulterior intention in uttering it (it being unlikely that β should merely wish to ascertain the answer to it), will search for the answer in responding to that act. In doing so he will find that his previous utterance (to which β 's is a response) is indeed - as implied by the question - ambiguous in form between a question and a (tentative) statement - it is of declarative form, but in the game context it is a well-formed Game Question. Since β can only supply an Answer (his expected game move) to a question (as opposed to a statement) and α 's ambiguous utterance might conceivably have been an extended recap in the form of an inference, α can deduce that β has grounds for finding it difficult to respond to his (α 's) utterance. He can then match the utterance to the Request Rephrase demon, since the response expected by the Meta-frame in the event of such difficulty is a request for a rephrase, and answering β 's question will indeed have the effect of rephrasing the game question so that its force is unambiguous and β can reply appropriately.

G.34 α : Look, just ask me one question at a time and I'll answer 'yes' or 'no' - remember the rules of the game!

This rather complicated response blends at least three acts - Request Rephrase, Object and Remind - of which the first is, given the motivations of the players in the game, the principle one. By form (IMP β) the first part of the utterance is a command of some sort, but in combination with the subsequent future declarative clause it forms an attitudinally marked conditional statement of intent. The second part of the utterance clearly indicates a direct realization of Remind. Now, since the propositional content of the State Intent refers to the response β 's preceding Game Question was intended to elicit, it can be deduced by β that the action referred to in the conditional part of α 's utterance is what α wants him to do in order for him (α) to be able to produce the desired response. Performing that action (asking one yes/no question at a time) is tantamount in the context to performing a Rephrase. The whole sequence can also be seen to constitute an Object: α is reminding β of the rules; presuming that α is being relevant, β will be able to deduce that he must have broken the rule quoted (the force of the Remind is to make him aware of just that). This of course constitutes grounds for the activation of the Object demon - in the spoken medium the intonation would no doubt also suggest that act. This is not to say that the hearer (β) must compute the double primary force of the utterance in this manner: either way (leading to Object or to Request Rephrase) would be sufficient for him to respond appropriately with a rephrase that meets α 's objection. This is due to the partial overlap in input and output conditions for these acts in the game context, as has been noted previously.

G.34 α : I think you would do better to avoid concepts such as 'transformed'.

This STATE p form (where 'p' includes 'you' and 'do better to' + VP) is probably a direct realization of Propose Action, the 'I think' being introduced by a tentative/polite discourse-level rule. Recognizing it as such, β , who is expecting an Answer response at that point (according to the Game Frame) but presumes that α is being relevant and - more specifically to the game - generally helpful, would look for the most likely act in the Meta-frame to which the utterance might correspond. He would there find that it fits Give Help, on whose output it is either marked indirectly or whose function it can be seen to subserve, given the propositional content of the Propose

Action. Because of that content (i.e. a proposed action relating to the phrasing of A's previous Game Question) the effect of following the advice proffered here by A would be a rephrasal of the utterance concerned. A's utterance above is thus a blend of Give Help and Request Rephrase.

To summarize the results of the elicitation tests: if we allow for stylistic variations, the optional insertion of discourse-determined elements and the combination of elements of more than one realization in a single utterance, there is a good match between the newly elicited tokens of Request Rephrase and Object and those found in the original data and formalized as realization rules¹. As in the case of the original data a few indirect realizations were found whose force has to be computable from local context, general conversational principles and Meta-frame expectations. Those that were not directly analogous to the cases examined in Chapter 5 were analysed in the same pre-theoretical manner as in that chapter to indicate the procedures the model would ultimately have to incorporate if it were to simulate these cases. One other point that arises from the new data is that lexical fillers in our realization rules may have to be stated in a rather more abstract manner in some instances, in order to cover a range of related variants. For example, the VP in the first realization formula for Request Rephrase (page 92) can be filled by such explicit lexical items as 'rephrase that', 'be more precise', 'like to choose' (i.e. one of two questions), or 'repeat that', etc. This could be done either by stating the essential semantic features of the verbal expression filling that slot (e.g. 'action resulting in the rephrasing of the previous utterance') or by listing the most common expressions actually encountered in the data, with the understanding that these can be replaced by closely synonymous expressions. Probably the former solution would be the more desirable over a wide range of data, though it might cause considerable complexity in terms of computational implementation of the interface between demon outputs and the speech generator.

¹ But, of course, not all forms of these acts met in Chapter 5 occur here.

The second approach towards justifying the model - that of simulating a simplified version of it on the computer - was undertaken in two stages, in collaboration with two students of Artificial Intelligence who devised a compound program (based on the model) for generating well-formed games of Twenty Questions in interaction between the computer as guesser and the human operator as answerer¹. The first stage of OG (for 'Object Guesser') was implemented by C. Beierle and is in LISP (a programming language particularly suited to the parsing and generating of natural language); it generates plausible sequences of game questions that permit the system to guess the object thought of by the human answerer (chosen from those it 'knows' about) within a maximum of twenty game exchanges. The propositions in LISP correspond fairly directly to the propositional input to the speech generator envisaged on the model. The data base on which the program operates consists of property lists on LISP addresses corresponding to the entities the system knows about - some twenty human beings (of various nationality, profession, era, etc.), about half a dozen body parts, and a similar number of items of apparel. The object chosen by the answerer can be any of the first category or any combination of one of the latter two categories with one of the first (e.g. Mao's nose, Elizabeth Taylor's handbag, etc.); he may answer 'yes', 'no' or 'can't say'.

The body of the program, which chooses the successive game questions, is based on the flow diagram on page 166 representing the strategies employed by human players, but is of course implemented in a manner constrained by existing computational techniques. Of the three human strategy types discussed in Chapter 7, OG can be said to incorporate types (i) (top down) and (iii) (useful question-types), but not (ii) (plausible leaps). The program works, essentially, by choosing a 'tree' corresponding to a 'useful question-type' relevant at that point of the game and formulating a question about the highest level node on that tree not yet filled (with a negative or positive binder for the property labelling that node). There is not just one classificational tree (binary discrimination net) dividing up the system's universe down which it moves algorithmically - as in early 'Twenty Questions'-like simulation programs based on EPAM (Feigenbaum, 1963).

¹ The two halves of the program will be stored in the archives of the Artificial Intelligence department at Edinburgh for a year, thereafter the programmers can be contacted through the department.

There are several multi-branching trees, such as those for profession and nationality, and others which have simple binary branchings such as 'male/female' and 'alive/dead'. The decision as to which tree to move to next in formulating the subsequent question at any point in the game is made by keeping track of possible 'successor tree-shifts', according to the tree presently on. Some degree of randomness is allowed into these 'suggestions' to ensure that no two games are likely to be played with quite the same order of question-types - i.e. the suggested tree-shifts are only partially ordered, enough to avoid illogical shifts to trees no longer relevant or completely filled¹. At the node reached on the chosen tree, the program tests to see how many entities still on the search set remain down the two branches below that node (the numbers are updated each move) and only asks a corresponding question if a critical percentage of candidates remains down one branch rather than the other; otherwise it moves to the next tree suggested as a suitable successor. When the system receives as input from the human answerer confirmation or denial of the proposition it has just asked about, it integrates this information by updating the number of candidates marked as remaining on the unfilled branches of all the trees. This amounts to scrutinizing the remaining members of the search set to see if there is some property marked on at least one of them (and also found on some but not all of the others) about which a question has not yet been asked; the sum of all bindings on the trees represents the property list for the unknown object. The trees are of course cleared (of truth value binders) at the outset of each new game. The program also includes various 'implication' rules whereby redundant questions are avoided and a reduced number of properties can be entered on entity addresses in the data base - for example the system knows that the property 'English' implies 'British', which in turn implies 'European'.

Comparing the first stage of OG with the model based on human performance, it is apparent that there is a major difference (apart from the relative simplicity) between the two types of game produced: the artificial games are played with a 'closed set' of candidate objects, whereas the human games are all 'open set' in as far as the game object could be practically any entity both players have know-

¹ And only a certain number of successive moves down the same tree is allowed.

ledge of. Thus, in the case of the simulation program, the system keeps track of exactly which of a manageable number of entities remain on the search set at any time. This may also be the case for human 'open set' games towards the end. Some initial testing was carried out constraining human players to the closed set condition to see if there was any observable difference in strategy promoted by that condition. Subjects in the closed set condition were given a list of objects, to which they could continually refer and one of which was selected by the experimenter as the game object; a control group in the open set condition was not shown the list. All subjects then read (or in another version actually played) the initial few exchanges of a game for that object. At the point of truncation they were given a series of single-word probes in a tachistoscope and asked to respond yes or no as to whether the object named on the probe (either a member of the total search set on the list or not) could or could not be the game object. Latencies were recorded for the responses. Although there was some indication of an interaction between the open/closed condition and, on the one hand, whether the probe referred to a member of the search set or not, and, on the other, positive/negative answers, the results were not statistically convincing and hence are not presented here in detail. This was doubtless due to the large number of variables (and particularly that of 'typicality' of match¹ between a probe and the relevant conjunction of properties known for the game object) inevitably attendant upon tests of this nature applied to behaviour as complex as that displayed in 'Twenty Questions'. What did emerge clearly was - not surprisingly - that the closed condition made the game easier to play. The subjects in this condition typically made subjective assessments, when so urged, to the effect that they found themselves mentally 'ticking off' successively disqualified candidates from the shrinking search set - which is analogous to what OG does.

The second stage of OG was implemented by D. Allan. It converts the LISP output from the first stage into suitable surface forms in English. For practical reasons this half of the program was written in IMP, though it is readily translatable into LISP and the two halves could run as one in theory in order to play games directly in English (rather than in LISP 'pidgin' which must be passed on to the

¹ Cf. Rips, Shoben and Smith (1973)

second stage). It takes as input sequences of game question propositions from the first stage (rewritten in IMP format) and applies to them syntactic and discourse-level rules corresponding to those on the model in order to produce - in conjunction with a suitable lexicon - a series of well-formed English sentences (one proposition can produce more than one variant of a corresponding English sentence). Generation is by syntactic rule (as in the speech generator of the model) rather than by preformed sentence-length 'chunks' with variable slot fillers; the latter would have been an easier but less interesting solution (similar to that used by Winograd, 1972, and by the majority of Artificial Intelligence modellers, who tend to be more interested in detailed parsing than production¹). The purpose of this second stage was to show on the one hand the feasibility of implementing linguistic rules of the type the model stipulates, and on the other hand to show how a variety of different surface forms could be generated in English without the intervention of order-changing transformations once the initial syntactic template is set up (always an ASKIF in this context). Discourse-level rules (those for anaphora and deletion) apply after the clause-level syntactic rules, as on the model. Included in the lexicon was information as to particular collocations into which certain of the lexemes - corresponding to terms of the propositional input - enter when they are treated as predicates. For example, 'above' is realized as the predicative expression 'be worn above' if the grammatical subject is an item of apparel, and 'leather' is realized as 'made of leather' when used as a predicate (i.e. in the production of an English utterance from the input proposition 'LEATHER ?'). This 'key-word' approach (implied by the model) would seem to have some degree of psychological plausibility (see Chapter 8, also Vygotsky, 1962, on 'inner speech').

Sample output of both halves of the program is provided in the Appendix. Besides generating well-formed English games as required, the program serves to pinpoint some of the difficulties that would have to be met if the simulation were to be extended so as to generate output closer to the natural dialogues of our data, displaying a wide range of discourse acts. As it stands, OG cannot handle any deviation from the regular alternation of game questions and answers (apart

¹ But cf. Simmons, 1969, and Goldman, 1974

from pre-formed tokens of Express Pleasure and Propose Action). What is needed is an implementation of our Meta-frame with its 'expected' demons as presented in Part One of the thesis.¹ Although this is not an insurmountable task, the size and complexity of the program would escalate rapidly, requiring a wider and wider data base of general and particular knowledge for each new discourse act introduced. Presumably as more sophisticated computational methods for handling discourse (and in particular indirect discourse acts) evolve, the practical feasibility of the project will grow accordingly (cf. Lehnert, 1977, for what is probably the most direct approach to this area - one based on 'conceptual dependancy' - from within Artificial Intelligence to date). What the present pre-programmatic model has attempted to do is at least to have indicated all the essential factors that have to be taken into account in modelling one particular area of verbal behaviour, and to have suggested the simplest linguistically justified path towards more ambitious simulation projects for analogous areas of behaviour.

¹ Even then, of course, the computational means of determining the force behind indirect tokens of an act by the examination of local context and motives (and general conversational principles) would still have to be added to generate and comprehend utterances analogous to all those in our data.

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Appendix: The Corpus of Games

G.1	English	Questioner's nose
G.2*	"	Chinese statuette
G.3	"	Princess Anne
G.4	"	Forth Rail Bridge
G.5*	"	House on Danube Street
G.6*	"	Coat-hanger
G.7	"	Packet of cigarettes
G.8*	"	Beer syphon
G.9	Eskimo	Questioner's nose
G.10	"	Queen Margrethe
G.11	English	Questioner's nose
G.12	"	Packet of cigarettes
G.13	"	Questioner's nose
G.14	"	Packet of cigarettes
G.15	"	" "
G.16	"	Questioner's nose
G.17*	"	Suspender belt
G.18	"	Forth Rail Bridge
G.19	"	Packet of cigarettes
G.20	"	Questioner's nose
G.21	"	" "
G.22	"	Packet of cigarettes
G.23	"	Questioner's nose
G.24*	"	Scott monument
G.25	Japanese	Packet of cigarettes
G.26	"	Questioner's nose
G.27	English	Forth Rail Bridge
G.28	"	Princess Anne
G.29	Japanese	Questioner's nose

G.30*	English	Margaret Thatcher
G.31	"	Princess Anne
G.32	"	Forth Rail Bridge
G.33	"	Packet of cigarettes
G.34	"	Questioner's nose
G.35	"	" "
G.36	"	Packet of cigarettes
G.37	"	Princess Anne
G.38	"	Forth Rail Bridge
G.39	"	Princess Anne
G.40	"	Forth Rail Bridge
G.41	"	" " "
G.42	"	Princess Anne
G.43	Russian	" "
G.44	"	Packet of cigarettes
G.45	"	Forth Rail Bridge
G.46	"	Questioner's nose
G.47	Eskimo	Queen Margrethe
G.48	English	Forth Rail Bridge
G.49*	"	Cake
G.50*	"	Greyfriars' Bobby

Games marked * were played by a post-graduate couple in an informal setting. The other games (except for the Eskimo ones recorded 'in situ') were played by post-graduate students or staff in studio conditions (usually two games per couple).

Conventions in the transcripts: a square vertical brace links two overlapping utterances; a wavy arrow represents hesitant intonation; 'sotto voce' delivery (to self) indicated by lack of initial capital and three dots (before and after) - which also mark pauses of significant length.

The printed instructions given to the players before their initial trial game(s) were as below:

- 1) The questioner (Q) must try and guess the object the answerer (A) has in mind; he or she has twenty yes/no questions to do so.
- 2) The object will be given to A on a slip of paper and will be a specific material thing or person (or part of one) not necessarily in the room at the time, i.e. a name or 'the X' where X may be a noun (singular or plural) or a descriptive phrase.
- 3) To start the game, A will state whether the object is animal, mineral or vegetable, or a combination of these. Note that animal products (like fur) are animal, that paper, etc., is vegetable, and that plastic, paint, etc., are mineral.
- 4) A should feel free to elaborate an answer somewhere between a categorical 'yes' or 'no' if necessary, and can request Q to be more specific.
- 5) Recapping by Q ('thinking out loud' about the information he or she has already been given) is permitted, as is asking what number question he/she has reached.
- 6) Around question fifteen, A may give Q a hint if he/she seems to be stuck.
- 7) After the twentieth question (which must be a guess at the object if it is still not known) feel free to make comments on the course of the game.

The original recordings have been deposited in the Tape Library of the Department of Linguistics at Edinburgh University.

Game 1

α : It's animal.

β : Is this a human animal?

α : Yes... (laughs)

β : Is it part or whole of a human animal?

α : We have to rephrase the question according to the game.

β : O.K. Is this part of a human animal?

α : Yes.

β : ...but it's a specific one... Is this part of a human animal above or below the waist? - Is it above the waist?

α : Yes.

β : Is it above the neck?

α : Yes.

β : Is it the whole head?

α : No.

β : Is there one or more than one? - is there one?

α : Yes.

β : There's one... Is it a nose?

α : Yes.

β : But somebody - does this count as a question? - somebody's nose? It's some specific person's nose?

α : Well, that's given in the thing that we're talking about a specific object.

β : Right. So I've got to guess who it is... Is it a TV personality's nose?

α : No.

β : Is it someone at the university's nose?

α : Yes.

β : Somebody in the Applied Linguistics department's nose?

α:Yes.

β:Is it male or female? - is it male?

α:Yes.

β:Does the person to whom this nose belongs also have a beard?

α:No.

β:Is it X₁'s* nose?

α:No.

β:Is it staff?

α:No.

β:Right...Is it X₂'s* nose?

α:No.

β:Is it a member of the MsC course?

α:No....Do you want a hint at this stage or not?

β:Er...Yeah.

α:Um...Relatively difficult to see it.

β:Hold on, can I recap it? It's the nose of a male person in the Applied Linguistics(department) who is not staff and not on the MsC course...but is male -

α: - and beardless.

β:And beardless...I think it's Y's* nose.

α:No.

β:But it's difficult to see...

α:Relatively difficult to see.

β:So...hang on - I've had seventeen...relatively difficult to see...Think I'd better ask why...Is it relatively difficult to see because it's covered?

*Members of the department

* The speaker(β)

α: No... (pause) Er, hang on, I think I've made a rather bad mistake... However, let's finish it, 'cos it doesn't matter since the result doesn't matter.

β: ...why is it difficult to see?... You mean it's difficult to see at all times?

α: The thing is - I think you got the answer but I said 'no'. Because of the way you phrased it.

β: In that case, was the answer corefferential with 'my nose'?

α: Yes - because you said it in passing and I thought - you know - I wasn't listening too carefully, and I thought 'Y' was somebody in the room or you could see through the window. Sorry.

β: Oh, I'm Y.

α: I know, I know, but I wasn't watching you and you just sort of said it in passing; you said two other people's noses and I thought ah! you must be referring to somebody without thinking...

Game 2*

α: It's mineral.

β: Is it metal?

α: No.

β: Plastic?

α: No.

β: Glass?

α: No.

β: Well, is it some sort of stone?

α: Yes.

β: Is it precious stone?

α: Semi.

β: Is it likely to be found in a piece of jewelry?

α: No... Well, the material-

β: -I mean could it be mounted? }

α: - Of which it is made could - might conceivably be found in jewelry, but the particular thing I'm thinking of is not jewelry.

β: Ah. So you're thinking of a specific piece of rock or whatever...?

α: Yeah.

β: Is it something like a statue?

α: Yes.

β: Is it the Confucian statue?*

α: Yes.

(*A jade statuette owned by the players)

Game 3

α The object is animal.

β Is it native to Britain?

α Yes.

β Does it have long fur?

α No.

β Does it have two legs?

α Yes.

β It's a man.

α No.

β Is it a female?

α Yes.

β Is it a particular person you have in mind?

α Yes.

β Is it somebody connected with the cinema?

α No.

β Or the acting profession in general?

α No.

β Is it somebody connected with academic circles?

α No.

β Is this person living now?

α Yes.

β Were they born after the war?

α I think so - yes.

β Is it a famous person?

α Yes, you could say that - well-known, famous.

β Connected with the artistic world in any way at all? By
that I include music and art in general.

α No, no. That's eleven questions.

β Is it a politician? Is she a politician?

α No, I'd say not...

β Ah...

α That answer has certain reservations. Very slight ones.

β May I just recap - she's British; she was born after the war; and she's perhaps vaguely connected with politics...

α Yes; what she is makes her a political entity in a sense...
That's a clue.

β Does she have a well-known husband?

α Yes...

β Does he work in the same line as she does or...?

α I find that hard to answer, really!

β Well you must answer it!

α The problem is the word 'work'.

β Ah! Is it the Queen?

α No?

β Is it somebody connected with the Queen?

α Yes.

β Closely connected or - is she closely connected?

α Yes, you'd say that.

β Is it Princess Anne, then?

α Yes it is - and that's eighteen questions.

Game 4

β : It's mineral.

α : An instrument?

β : No.

α : Simply an object?

β : Yes.

α : Does it have any functional value whatsoever? - can you use it for something?

β : Yes, it does.

α : Would the function be related to what happens in this building?

β : No.

α : Is it something very common?

β : Common? No, it isn't.

α : An unusual object?

β : Yes. That particular one.

α : Are you referring to something specific?

β : Yes.

α : Is there more than one?

β : Um... That's difficult to answer! No, there isn't more than one of these, no.

α : There is only one of them on this planet...

β : Yes, in a certain sense, yes.

α : That's not very helpful... Size - is it a large object?
Is it larger than me, for example?

β : Oh yes, much larger.

α : Do people enter it?

β : Not exactly, no.

α : They partially enter it...?

β : No, no, they don't.

α : And you said it has no specific function or purpose, therefore something decorative -

β : Yes I did, I said that it had a function, very much so.

α : That's right, you told me... That's to say somebody - or people - use it, right?

β : Uhuh.

α : It's used by people; and there's only one. Does that mean only one person is able to use it?

β : Oh no, no.

α : And if there's only one in existence, does it exist in a very general sense or a very limited sense? - in the sense that I'd say the telephone is one thing but it's used widely?

β : Yes, in that sense.

α : We're referring to a system?

β : No, we're not. Not directly.

α : Is it a device powered by something?

β : No, it isn't.

α : Does it supply power?

β : Oh well - wait a minute] - device powered by something...

Not if you think of it in its broadest sense, no.

α : Is it required to supply something? - in terms of energy, power, light or anything?

β : Uh, no...

α : Would I recognize it if I saw it?

β : Oh yes, certainly.

α: Better start localising...

β: You've had fifteen...

α: Could I see it in this country?

β: Oh yes.

α: So it's one specific object - I'm recapping now -; mineral,
in this country, which neither supplies nor requires energy--

β: I didn't say it didn't require energy...

α: That's true, you didn't... Is its existence important to
anyone besides the person using it?

β: Yes, yes it is - oh, to anyone else besides the person us-
ing it? No, probably not.

α: Does it have any symbolic nature or function?

β: No, I wouldn't say so. You've only got two questions left.

α: It's not a mace or a sceptre or anything of that sort?

β: No.

α: Does it arouse people's likes and dislikes?

β: Um, possibly not now... because it has something more rec-
ent that you can compare it with. If you'd like to think
along the lines of communication...

α: It's a form of mass media or something...?

β: No, no...

α: It's not an atomic bomb?

β: No, no. Think of something in this area.

α: In Edinburgh? I'm not a Scotsman.

β: You don't have to be a Scotsman to know it.

α: You can tell me now, since we've gone well past the twenty.

β: It's the Forth Rail Bridge.

α: Oh!

β :I was late with my help perhaps...

α :Even so...

β :I was short of ideas for it - I began thinking of ideas for it earlier on...

α :I should really have - well,when I was inquiring about the size of it -

β :But it was difficult - the one about energy - because you need energy to send the trains along the rails,but the actual bridge itself doesn't require energy,and yet it requires energy to perform its function.

α :Well,power,yes.What probably put me off more than anything ,what led me astray was - and it means I led myself astray,I'm not accusing you of anything -,was the fact that there was one specific object which I related to one specific person using it.That was probably my own -

β :Yes,but you asked me if there was only one person used it and I said 'no'.

α :That is what I didn't fully take in.If I'd gone on further along that line - who uses it and how is it used - then I'd have got there.

Game 5*

β: This one is principally mineral - but little bits of everything else.

α: What do you mean 'little bits of everything else'?

β: Oh, just mineral.

α: Just think of mineral?

β: Just think of mineral.

α: Is it stone?

β: Yes. Principally.

α: Is it precious stone?

β: No.

α: Is it a building?

β: Yes.

α: In Edinburgh?

β: Yes.

α: Do I ever go there?

β: (laughs) I hope not!

α: Danube Street?

β: Yes! (laughter) So what on Danube Street?

α: Well, you know - Madame what's-her-name on Danube Street, the brothel.

β: What about the brothel? It's not 'the brothel'.

α: It's not the brothel? You said it was a building.

β: Mm...

α: I mean there's just the street and houses - what do you want?

β: Mm. I want a mineral object.

α: In the brothel?

β: No.

α: Outside the brothel?

β: Yes...

α: Like the doorstep?

β: No.

α: Is it attached to the building in any way?

β: Yes.

α: The plaque outside?

β: What plaque? No.

α: The foundation?

β: No. Recap - try and think of what I told you.

α: You said it was a building so it can't be part of it...

β: Right.

α: Well, I mean the brothel's a building -

β: Right.

α: Is it the whole of Danube Street?

β: No.

α: To do with the brothel?

β: Not directly.

α: Oh? That's crazy...

β: It's easy.

α: It is a building - let me recap - it is a building on
Danube Street...

β: Uhuh.

α: But it's not the brothel...?

β: No.

α: No?

β: No. It's not the brothel.

α: The house next door to the brothel?

β: Yes. It's the neighbours' house.

Game 6*

α : Oh, I have to give you the definition first, don't I.

β : Er, yes.

α : I think that's how they do it - they always say 'It's - ',
you know...

β : Right.

α : It's mineral and vegetable.

β : Um, is the vegetable wood?

α : Yes.

β : Is the mineral metal?

α : Yes.

β : Has it got electrical parts inside it?

α : No...[~]

β : Is it a piece of furniture?

α : No.

β : Is there one in this room?

α : Yes.

β : It's not a piece of furniture; it's made of metal and wood.

Is it bigger than that chair?

α : No.

β : Is it bigger than that shoe?

α : Um, which way? Length-ways or width-ways?

β : In volume is what I was thinking.

α : In volume, no.

β : You're counting the questions, yeah?

α : Uhuh.

β : That wasn't a question. (laughs) O.K.? That was a comment...

Did we buy it?

α : ...Would you like to rephrase that?

β : (laughs) I don't want to rephrase it! Did one of us, in other words -? }

α : Yes.

β : Did I buy it?

α : No.

β : Gosh, that narrows it down a bit! ... Um, right. Is it something I enjoy using?

α : (laughs) No.

β : Is it something which you enjoy using?

α : Not particularly.

β : Is it something you use every day?

α : Yes.

β : Is it something you use over twenty times a day?

α : No.

β : How many's that?

α : Thirteen.

β : Is it in your handbag?

α : No.

β : Is it on the table?

α : No.

β : Is it within (laughs) one foot of you?

α : No! (laughs).

β : Is it above us?

α : No.

β : Let me recap. It's not bigger than your shoe in volume, right?

α : No.

β : And, um, it's metal and wood... and you use it every day and enjoy - no, you don't really enjoy -

α:No...] You use it too - or one of them.

β:Hmm...And it's in this room?

α:There is one of them in this room - but we have more....

Oh, that was a question - eighteen!

β:Oh!(clicks tongue;pause)...It's a coat-hanger!

α:Gosh, that was brilliant!(laughs)

β:That's deduction, my dear Watson, that's deduction!

Game 7

α: The object is vegetable.

β: Is the vegetable living?

α: No.

β: Can it be termed a vegetable product?

α: Yes. Two.

β: Would this product come from a higher plant - such as trees and flowers, rather than lower ones?

α: You must be more specific.

β: Does it come from trees?

α: I don't think so, no.

β: No... O.K. Is it a fabric of some kind?

α: Not if you mean by fabric clothes, no.

β: It's not, no... Hm. Is - doesn't come from trees and... not a fabric...

α: No, it's not a tree, no.

β: Right. Would this - could you normally eat it?

α: No, you can't eat it. Five.

β: O.K.... so it's not that, not that, and not that... kinds of vegetable products... Would it normally be used in someone's job or anything?

α: Uh... not as part of the job, no. Six.

β: No, just part of the...

α: You were on the right track when you asked about tree...

β: Oh - would it be, er, well, would it be, say, paper?

α: Correct.

β: Correct. O.K.... Would it be a book of some kind?

α: No, it's not a book... Nine.

β: Oh, would the paper be printed on in any manner?

α: Uh... in examples I know it is printed on. There may be ex-

amples where it isn't.Ten...That's not very relevant.

β:It's not very relevant.

α:Well,it might help,it might help,but...

β:Yeah...Now...would the rest of the paper be wood or -?

α:Not wood,no.

β:Or metal?

α:Not metal...The object is vegetable throughout.

β:Throughout,O.K....let's see...

α:Yes,you want to pin down what the rest of it is.You've got the paper bit...

β:Yeah,I got the paper bit...Would the rest of it be plastic?

α:No,no,the rest of it is all vegetable - what you're trying to get hold of is still vegetable.

β:Would the rest of it be cloth,by any chance?

α:Pardon me?

β:Cloth.

α:No,you've already established that fact.I won't count that as a question either.

β:Right,so it's not fabric and anything mineral at all,it's vegetable.

α:No,it's purely vegetable and you've got paper involved in it.But the rest is not paper.

β:And it's not living.

α:So we're still on - still coming up to question thirteen..

β:O.K.Would it be - the rest of it be firm,say,as opposed to soft?

α:The rest of it would be fairly soft.Soft rather than firm, though.

β:I don't know whether that's a yes or no answer!

α:It could be made firm,but normally it would be soft to the touch.

p :Yeah...I could think of a real 'off the wall' one right now - except that it would contradict one of my questions I asked before...

α:Don't forget you're looking for a specific object.So it's not going to be a vague thing like paper - paper and something - it's not going to be - it's going to be an actual object.

p:An actual object.I'll try another tack.

α:Well,think what paper is used for apart from books,which you've already mentioned.

p:Books and newspapers and all that...Um,would the paper be on the outside?

α:Yes,the paper would definitely be on the outside.And what you still have to get is on the inside...Fourteen.

p:The - would the inside be a box?

α:No,no - not the inside,no.Fifteen.

p:No,O.K....kind of a...and you said earlier it wouldn't be normally...Well,let me change one of my earlier questions around:would the inside normally be eaten?

α:No,no part of this is normally eaten.I won't count that as a question.

p:... 'cos I was thinking of a packet of food or something...

α:It's not a packet of food,no.

p:Count that if you want.

α:No,I won't count that one...(you've) already established it wasn't eaten,so - that doesn't count.

p:O.K.

α:But you're on the right track - a few of - most of the words you've mentioned are definitely on the right track.

p:...Would the paper form some sort of coating over this?

α: Coating or covering, yes. Some sort of - yes. Sixteen.

β: Yes. That's good... Would, um, well, here's an 'off the wall' one: would the - what's inside - be smoked?

α: Yes. Now you're definitely - you're almost there now. Seventeen.

β: O.K. Is it a packet of cigarettes?

α: It is a packet of cigarettes. That's eighteen. And you've only got to specify which packet of cigarettes.

β: The one lying there.

α: Yes, well done - nineteen.

Game 8*

β :It's mineral.

α :Is there one in this room?

β :No.

α :Do we own one or some?

β :We own one.

α :Just one?

β :Yes.

α :Would we be upset if we lost it?

β :Not really - well,yes,just a tiny bit...No,you couldn't really care less,I should think...I mean,well,yes(laughs), you wouldn't want to loose it...

α :Is it something we've bought within the last six months?

β :No.

α :Does it in fact belong to us?

β :Yes.How many's that?Gosh.About four?

α :Five,I think.

β :Five.

α :Is it smaller than my hand?

β :No.

α :Is it something used in the kitchen?

β :Yes.

α :Is it metal?

β :No.Told you that.

α :Oh.But it's mineral...

β :I'll take that back 'cos I did tell you.

α :Oh,is it plastic?

β :Yes.

α :Aha!...Can it be used for containing liquid?

β :Yes,it can[~]... I mean that's not its purpose though.

α: Have you just washed it up?

β: No.

α: Sorry, can I recap. It's ours. It doesn't belong to the flat. And we haven't bought it within the last six months. Oh! Is it one of the plastic bags?

β: No. Brilliant idea, though. No. That's eleven.

α: One of those plastic containers for keeping bread or biscuits...?

β: No.

α: Can't think of anything else that is plastic - and not meant for containing water... and in the kitchen...

β: I didn't say it was in the kitchen, I said it was used in the kitchen.

α: Oh... Well, when I said 'for containing water' I was thinking of your beer equipment. And you said it wasn't meant for containing water; well, beer is water...

β: Uhuh. I answered with all that in mind.

α: So it's not any of that... it's used in the kitchen, it's not in the kitchen... Do we sometimes use it somewhere else?

β: No.

α: It's plastic?! It's not in the kitchen, but we use it in the kitchen...

β: Uhuh; I use it in the kitchen... at least-

α: You use it in the kitchen. And it's not any of your beer stuff and it doesn't contain any liquid and it's not in-

β: That's not altogether true - but it's not altogether what I told you.

α: Is it meant to contain something?

β: No.

α: Ah! Is it the tube - or syphon?

β: Yes. Fifteen. I gave you a few hints...

Game 9(Eskimo)

β:Uumasuuvoq. (It's animal)

α:Inuk? (A human being?)

β:Inummiippoq. (It is in/on a human being)

α:Uumasup iluani? (Inside the animal?)

β:Naamik.Silataani. (No.On its outside)

α:Niuuva? (Is it a leg?)

β:Naamik. (No.)

α:Niaqoq? (A head?)

β:Naamik.Niaqumiippoq. (No.It's on a head.)

α:Qingaq? (A nose?)

β:Aap.Kija qingaa? (Yes.Whose nose?)

α:Uvanga qingara? (My nose?)

β:Aap. (Yes.)

Game 10 (Eskimo)

- α : Uumasunut ilaavoq. (It is animal)
- β : Uumasooq taanna nunami uumasuuva? (Does this animal live on land?)
- α : Aap. Nunami uumasuuvoq. (Yes. It does.)
- β : Nunami uumasuuguni sutortarpa? (If it lives on land what does it eat?)
- α : Neqit, aalisakkat, naasullu. (Meat, fish and plants)
- β : Uumasooq taanna nassoqarpa? (Does this animal have horns?)
- α : Naamik. (No.)
- β : Uumasooq taanna meqqooqarpa? (Does this animal have fur/hair?)
- α : Timimi ilaatigut meqqooqarpoq. (It has hair on parts of its body.)
- β : Uumasooq taanna sumi inuuva? (Where does this animal live?)
- α : Nunami! (On land!)
- β : Nunami sorlermi? (But in what country?)
- α : Qallunaat nunaanni. (In Denmark.)
- β : Immaqa eqqarsaatigaat qitsuk? (Perhaps you are thinking of a cat?)
- α : Nagga. Uumasunut ilaavoq, kisianni nersutaatinut ilaannigilaq.
(No. It is animal, but it's not a domestic animal.)
- β : Eqqarsaatigaat immaqa inuk? (Perhaps you are thinking of a human being?)
- α : Aap. Inuuvoq. Inullu taanna kinaava? Pingaartumik atorfeqarpoq...
(Yes. It's a human being. And who is this human being? He/she has an important job...)
- β : Inuk taanna arnaava? (Is this human being a woman?)
- α : Aap, arnaavoq. (Yes, it's a woman.)
- β : Immaqa qullersaat ilaat? (Perhaps someone high up?)
- α : Aap, qullersaavoq. (Yes, she's high up.)
- β : Taamaakkumi Dronning Margrethaassaaq? (So would it be Queen Margrethe?)
- α : Aap. Dronning Margrethaavoq. (Yes. It's Queen Margrethe.)

Game 11

β: This is animal.

α: Is it human?

β: Yes?

α: Is it living?

β: Yes...

α: Is it in Britain?

β: Yes.

α: Is it in Edinburgh?

β: Yes.

α: Do we know it? - are we acquainted with it, I mean?

β: We certainly are acquainted with it, though you might find that rather a peculiar turn of phrase if you knew what it was...

α: Oh...it's human, it's living, it's in Edinburgh, we're acquainted with it, but not in the normal sense...Do we have any personal sort of relationship with it?

β: Very much so, yes.

α: Is it in the department of Linguistics?

β: At the moment, yes.

α: How many questions is that?

β: That's about seven.

α: Is it in the department of Linguistics in the flesh?

β: ...um, yes...yes, it is.

α: ...and it's here at the moment...Is it an individual?

β: Not completely, no...

α: Help!...Is it a class?

β: What do you mean by 'a class'?

α: Is it a class made up of a number of individuals?

β: No.

α: That's about ten, isn't it?

β:Um,that's ten...It's human and animate,but it's not an individual,neither is it a class...

α:Does it have a defined status?

β:That's rather difficult to answer...no,you have to be more specific.

α:Does it have a defined position?In the sense of -

β:- in relation to what?

α:-in some sort of organization.

β:Yes...yes,taking organization in a specific sense.

α:What do you mean by 'a specific sense'?Sorry,I don't know this.

β:(It's) part of a system,you see - then what do you mean by 'a system'? - not an administrative one,certainly.

α:I think I'm on the wrong track anyway.How many have I got left?

β:I think nine.

α:....it's neither an individual nor a class;it has a sort of position - define 'position' - but not clearly defined...

β:It has a very clearly defined position in relation to -you know...

α:No!

β:You're making an assumption as to its sort of - as to its being an entity,an individual entity.

α:Which is -

β:-unjustified.

α: - not unjustified?

β:- is unjustified.

α:And yet it's not a class,it's not a group...

β:And it's not freestanding,as it were...It's human,O.K.?, it's living and it's here in the department...

α:....it's here in the department,it's not an individual,and it's not a group made up of individuals...

β: So although it's living it's not living on its own. That's the point, I mean.

α: By that do you mean it's in some way parasitic? (laughter)
Great hilarity there!

β: Yes, it's part of a - yes... not in any negative sense. It's parasitic in as much as it's part of an organism.

α: Is it - no. Is it part of a particular person?

β: Yes.

α: Is it part of a member of staff?

β: No.

α: Does the person of which it is a part have a name?

β: Yes.

α: A particular name?

β: Yes.

α: Which leaves the field wide open... It's not a member of staff and it's someone in the department - at the moment... Is it male?

β: No.

α: Is it Mrs. X?

β: No, it isn't. (laughs) That was a shot in the dark, wasn't it?

α: That's about twenty, isn't it?

β: No, you've got three more. It's female and it's in the department - it's part of a female in the department at the moment...

α: I've got to get the somebody female first, haven't I?... I'm not going to get it... It could be any part of the body, hell... not a member of staff... Is it a student?

β: Yes.

α: Part of a particular girl student - how exciting! Wow! Must be somebody generally known...

(The object - the questioner's nose - was not guessed)

Game 12

α: It's vegetable.

β: Alive?

α: No.

β: An artifact?

α: Yes.

β: One particular vegetable or several?

α: Several.

β: Several...Of use or decoration?

α: Neither.

β: Why did someone make it if not to be useful or decorative?

That's rather difficult - I would have thought it must be useful or decorative else nobody would have made it in the first place.

α: Well, there is another purpose to its existence...

β: Is there?...Is it a - so, it's not a tool of any sort - is it found in houses?

α: Yes.

β: Found in houses...

α: How many's that - four, is it?

β: Yeah...found in houses and - is it a piece of furniture?

α: No.

β: Not a piece of furniture, but it's in a house...And is it, er, is it something you would carry - or could carry?

α: Yes.

β: You could...Is it largely made out of wood?

α: No.

β: Is it largely made out of - er, does it contain paper?

α: Yes.

β:it contains paper; you find it in houses; you can carry

it; and it's not useful or decorative...

α: And it's made of more than one -

β: - more than one thing... Yes, I see... Does it - well, does it contain metal?

α: No.

β: No metal. No wood and no metal, but it has paper and something else which is vegetable - what else is vegetable?... Cloth? I suppose - hang on, I'm not asking that one... You could carry it - would you normally think of carrying it? Would it be specific to any particular room in the house?

α: No.

β: No... Do you - hmm, it's not furniture either, is it? That's funny... Am I not really getting anywhere asking about houses the whole time? Is this a red herring?

α: It's more or less a red herring, yes.

β: More or less a red herring... thought so. Is it a specific item?

α: Yes.

β: One specific item. Have I seen it?

α: Yes.

β: Is it in the department?

α: Yes.

β: It's in the department... mostly made out of paper. I can't think of anything that's mostly made out of paper in the -

α: Not mostly, you see...

β: Ah, contains paper, sorry, but other things as well. But not wood or metal - which doesn't make life very easy.

α: It's more - as a rule it's more specific to a particular - to a person.

β: ...it's in the department, and I've seen it...

α: Not necessarily a particular person...

β: But it's not something somebody would use, though... neither would they find it decorative.

α: Wait a second - you said it's not useful - (that) doesn't necessarily mean that one won't use it...

β: I see... Is it in this room?

α: Yes.

β: On the table?

α: Yes.

β: Cigarettes?

α: Yes. It's actually the packet of cigarettes - it comes to the same thing, yes. I hesitated a little bit over the useful or decorative: it's not useful, it's more enjoyable; it's not useful, it's not decorative, but -

β: Yes. I suppose that's fair enough, in fact. I thought that divided up the whole world, but it doesn't really, I suppose.

α: There is another purpose to existence, yeah, but... A packet of cigarettes on the table... You're much better at that than I am...

α: It's animal.

β: Is it soft?

α: Yeah... It's soft - parts of it, I mean...

β: Is it small?

α: Yes. Relatively small.

β: Is it in any way edible - without gumming up your system?

α: I suppose you could eat it, yeah...

β: Could you eat it in one mouthful?

α: I suppose so, if you tried!...

β: Is it a primary colour?

α: A primary colour? You mean like - one of these - just regular colours like blue and red and green, sort of?...

β: Primary is red, green or yellow.

α: No, it's not.

β: Are we supposed to keep count?

α: That's five.

β: Is it in this room?

α: Yes.

β: Is it so small that, given the fact that it could be eaten, you could eat it in one mouthful?

α: You've already asked that, didn't you? Didn't you say that?

β: Not quite.

α: Not quite, well... I don't know, I said if you ate it - you could probably eat it in one mouthful... Is that seven questions?

β: It's animal, softish, small enough to be eaten in one mouthful - if you can eat it... Is it in its pure natural animal state apart from being dead? In the sense that it's a pure material, or is it a synthesized material?

α: Yeah. It's in its pure state, in its natural state, yes.

β: God, I'm stuck... It's not a watch-strap?

α No...How can I give you a clue?...I don't think you'd think of eating it.

β Well,I know that!It's not the ink in the ink-bottle?

α No.It's animal,though.

β Is it something leather?

α No.It's alive.It's in this room.

β It's you or me!

α Well,how do you phrase that?

β Is it - It's you or me,you can say yes or no to that.

α Oh yes.

β How many questions are left now?

α Was that ten,ten questions?

β I think that was too much of a hint.All right,it's me.

α Yes..(That) is not the answer.

β Is it part of me?

α Yes.

β A big part or a little part?

α A little part.

β One of my fingers?

α No.

β One of my eyes?

α No.Fourteen.

β You can eat it in one mouthful...it's alive,it's me...Some of my hair?

α No.

β My teeth?

α No.

β One of my toes?

α No.

β My nose?

α Yes.

Game 14

β It's vegetable.

α Vegetable. Is it in this room?

β It is. Yes.

α Is it big or small? Is it big?

β No.

α Is it a colour other than white - I mean a colour? Is it something other than white?

β It has something other than white. Yes.

α Is it in its natural state - as a vegetable, sort of?

β No.

α Does it come in a container?

β No.

α Let me see. Is it a paper product?

β Yes.

α What's that, seven or so?

β Six.

α Is it part of a book?

β No.

α Are there more than one of them?

β Not for the question, no.

α Does it have writing on it?

β Yes.

α And you said part of it was other than white..?

β Yes.

α ...that has writing on it...and it's not big...writing...Is it a piece of paper?

β No...Well, they could be...

α Let me see, is it - Did you say it was -? I can't remember if

it's - Is it a box of some sort?

β Yes.

α A box...Is it a tape-container, a tape-box? No it's not, it can't be: there's more than one of them...

β No...

α Or a cigarette package or -

β Yes - which?

α I mean, is it a cigarette package?

β It is.

α I mean, is it that cigarette package?

β It is.

α Oh!

β But you said 'the cigarette package'(sic), so I quietly removed mine!*

*Also on the table during the game

Game 15

β :The object is vegetable.

α :O.K.Is it wood?

β :No,it isn't.

α :...vegetable...Is it something you'd use over and over again,
or is it something you'd use once?I mean,is it something you'd
use over and over again?

β :No,it isn't.

α :Is it something you use for some specific purpose?

β :I've a good mind to go all Oxford on you and say define
'specific' and define 'purpose'...Um,no.

α :Oh...Is it something you'd find in an urban environment?

β :Yes,but not exclusively.

α :Not exclusively,hm(laughs)...bad question.

β :Actually I think you ought to remember that this is one
specific object that he's asked us to get,not a general one...

α :Right.I have a hard time with vegetable things and - if it
isn't me...vegetable...Is it a vegetable product,then?

β :Yes.

α :O.K.Is it a product of manufacturing?

β :Part of it is,yes...No,in fact just yes.But I'll give you
that there are two parts and both of them are in fact...

α :O.K.Is it something that we could find around here - at
Buccleuch Place?

β :Yes.

α :Is it -...gee,it's vegetable...it's not used for any speci-
fic purpose...it's a product of manufacturing...

β :Well,when you say 'used for a purpose' it's no.But I think
that might mislead you - very strictly speaking,no.

α :No.Is it an object of adornment - not in the sense of per-
sonal adornment,but in the sense of - is it for architectural
purposes?

β:No.

α:It's not for architectural purposes.In other words it serves a function - that's what I mean by 'specific purpose'.

β:Yes,it serves a function in a way,but if by function you expect something to have come of it - let's say function but not useful function...

α:Ah!Function but not useful function...Is it a complex vegetable matter?That is,is it made up of different sorts of vegetable matter?

β:Yes.

α:Is it big?

β:No.(laughs)

α:Is it very small?

β:Smallish.

α:...smallish - that would have been not big...it's something around Buccleuch and it's not big and it's complex vegetable matter and - goodness sakes...What question are we on?

β:Eleven...You're on question twelve.

α:Is it something found outside or inside?

β:Both.

α:Both?

β:I mean by 'it' you're going for the whole range now - there's just one specific object in mind.So I'll answer yes,it is inside at the moment.

α:It's inside at the moment...Ah!Is it cloth?

β:No.

α:Does it belong to a male?

β:Probably.

α:In other words there's no sex-difference - I mean there's no particular attachment to one sex over the other.

β:No,but you're still thinking of the whole range - this one belongs to someone but I don't know who.But in general the

whole class of them doesn't belong to one sex or the other.

α:(looking round;laughs)It's not in here!...product of manufacturing;isn't cloth and isn't wood...and it's vegetable.. and it's manufactured...Does it have permanancy?

β:No.And that will help you if you think about it.

α:Was it my lunch?

β:No,it wasn't your lunch.

α:How many questions do we have?

β:Sixteen.And I'd stay where you are,on the permanancy.It's a big help...What else disappears besides food?

α:That's what I was thinking...O.K.Is it a wood product?

β:Part of it is.

α:Part of it is...specific function...

β:Well,as you're on eighteen I'll be generous.The outer part of it is the wood function - it's the inner part that would help you more.It's the inner part that isn't permanent...that it is usually identified by in fact - the inner part.

α:Oh gosh...Has it anything to do with,um,literacy?

β:Literacy?!No.

α:So it has nothing to do with reading or writing.

β:No,absolutely nothing...Well,if you stay on this business of inner part and outer part,the outer part is the thing that is derived from wood.And there's one very common thing that's derived from wood that's often on the outside of things if you think of shops and supermarkets...

α:Geez,I feel like a real cluck!The outer part's of wood and associated with shops and things,it's round here at Buccleuch but has nothing to do with literacy...(looks around;laughs) I keep looking in here...part - outer part something to do with wood...

β:Yes,derived from wood.

α:Yeah, it would be like cardboard and paper,pulp and wood-and ply-wood,and cellulose...

β: Right, well it's in that lot...!

α: Cellulose...what about plastic?...

β: Stop-it was in that list.

α: It's got to be on that list! Cellulose, and it covers things...
It's a package of something.

β: Right.

α: O.K. What is it?

β: You've got one more question.

α: No. That was the twentieth.

β: Oh, I see - 'is it a package?'. Yes, it is. Twenty first: it's
the packet of cigarettes on the -

α: Cigarettes! Oh.

β: You got close to it with your lunch, really.

α: Well, I don't think of that as vegetable - I think of it as
mineral.

β: Well, cigarettes are vegetable.

α: Oh, I know...

Game 16

α : It's animal.

β : Is it anywhere in Buccleuch Place?

α : Yes.

β : Is it in this room?

α : Yes.

β : Yes. Good. There aren't too many animals in this room. Is the animal animate?

α : Well, the animal's animate, but it's not obviously, I mean-

β : Is - no, it's not an animal... Is the animal human?

α : Well, it's in this room and it's got to be animal - and yes, the animal's human.

β : Well, that means it's either you or me, is it not? Well, let's start with you. Is it you?

α : No.

β : Is it me?

α : That didn't take long - yes.

β : It is?

α : It's you.

β : Right.

α : That's five questions now.

β : O.K.

α : I mean there's more to it.

β : Oh, I see - I thought the whole thing was me. It's a part of me.

α : Yes.

β : Oh Christ!... Above the waist?

α : Yes.

β : Oh, so it's all the sort of clean bits... Mm. Is it my beard?

α:No.

β:Is it above the neck?

α:Yes.

β:What else have I got above the neck?...Well,my hair?

α:No.

β:Nose?

α:Yes.

β:My nose?

α:That's it.

β:Right.

Game 17*

α : It's mineral.

β : Is it a manufactured object?

α : Yes.

β : Do we own one - at least one?

α : Yes.

β : Is it metal?

α : No.

β : Plastic?

α : Yes.

β : Is there one in this room?

α : Yes.

β : Do we use it every day?

α : You keep using 'we', which is difficult.

β : I mean one of us.]

α : I do, yes.]

β : Would it be strange if I used it?

α : Yes!

β : Is there just one in this room - or more?

α : More.

β : But you're thinking of a specific one, right? That's not a question - 'cos you have to think of a specific object... Do you use it in the evening?

α : As opposed to any other time? No, I use it all the time.

β : Is it something consumable - I mean do you consume it?

α : No!

β : Is it a utensil?

α : No... That's eleven.

β : O.K. Let me recap. It's plastic; there are several in this

room but you're thinking of one of them; it's not consumable; you use it all the time, I don't... Is it within five feet of me now?

α: Yes.

β: Are you wearing it?

α: Yes.

β: Is it something in the cosmetic line?

α: No.

β: Is it decoration or jewelry, something in that line?

α: No. Fifteen.

β: Do you wear it below the waist?

α: Yes... (laughter; interference) That's not fair!

β: Well there's not too much plastic down there. Is it something to do with your stockings?

α: Yes.

β: The belt - the studs on the belt - the suspender belt?

α: Well, what do you call it? Suspender - yes, I'll give you it.

β: That's it, it's a stud - I guessed. How many was that?

α: It was eighteen.

Game 18*

β: It's mineral.

α: Is it metal?

β: Yes.

α: Is it a precious metal?

β: No.

α: Is it at all decorative?

β: It may be, but that's not its purpose...

α: So it's essentially a functional object -made of metal...

β: Right. That's three.

α: Are there lots of these things around?

β: No.

α: Are you thinking of one specific object?

β: Yes. That's not a question, 'cos I have to...

α: Is there one in this flat?

β: No!

α: Is it of more than two by three by three cubic feet?

β: Yes!

α: Is it something like a dustbin?

β: Nothing whatsoever like a dustbin.

α: Would you be very surprised if I went out and bought one?

β: Yes! Very surprised, yes!

α: Is it as big as a car?

β: Yes.

α: Oh. And it's just metal?

β: Uhuh.

α: Is it some kind of large container?

β: No.

α: Does it have wheels?

β:No.Ten.

α:Is it something flat or does it have depth?

β:Well,which of those do you want to ask?

α:Well,I'm thinking in terms of something like a gate.That
wouldn't have depth,that's sort of flat.

β:O.K.So is it flat?Answer:no.

α:Oh.Are there any of these things in Edinburgh?

β:Yes - well....The particular one I'm thinking of is not
exactly in Edinburgh,but - and there's only one of these
things in and around Edinburgh,but there are things like
it in Edinburgh...I mean the same general class of objects,
but...

α:Oh,is it something like a bridge?

β:Yes.

α:The Forth Bridge?

β:Which one?

α:Well,the metal one!

β:Yeah,which one?

α:It's the railway one.

β:Right.

Game 19

β It's vegetable...yes,vegetable...

α You're not sure about that,are you?(laughs)

Is it alive?

β No.

α Is it made up from different vegetable origins?

β Yes.Well,there's parts of it - the whole entire thing is vegetable,but there are different vegetables involved.

α Is it a product for consumption - for eating?

β Not for eating,but for consumption in a general sense...

α In other words it gets used up.

α But it's not eaten.

β Uhuh.But it's not eaten...That's three,right?

α O.K..It gets used up but it's not for eating...Is it - can it be used as furniture?

β No.

α No kind of furniture -soft furniture or any kind?

β No.

α Is there a lot of it around?

β Oh yes.

α Can you see some just now?

β Yes I can.

α Is it far - no,it's not.Not for drinking...Is it ink?

β No...

α Is it used for writing?

β No.

α Is it used for smoking?

β Yes.

α Cigarettes?

β Yes.It's the packet of cigarettes over there.

Game 20

β :Animal.

α :Is it a member of the class 'human'?

β :Yes....Not necessarily...

α :My goodness.Yes,but not necessarily?...

β :Yes,it's a member of the class 'human',but it need not be restricted to the class 'human'.

α :(laughs)I'm stuck completely!...Can it be only male?

β :No.

α :It can be male or female...This is ridiculous!...Is it alive - or,is it a live or dead human?

β :Um...alive.

α :It's alive?So it's not a corpse or anything like that...

β :No.In fact,oh no ; i.e.*- 'i.e. means 'that is' -so it is definitely human.I'm sorry.It's definitely human.I'm sorry.It's definitely human and it's alive.

α :And it's not - is it imaginary?

β :No.

α :So it's not fictitious.

β :No.

α :It actually lived and breathed - or lives and breathes.

β :Uhuh.You're very close.(chuckles)

α :I'm very close...Is it in this room?

β :Yes.

α :Is it you or me?

β :Yes.

α :Is it you?

β :No.

α :Is it me?

(*Looking at printed rules)

β:Sort of,yes.

α:It's sort of me?

β:Yes.(laughs)

α:Is it your idea of me?

β:No.

α:How can it be sort of me and still not maybe be human?

β:Ah,but I retracted that.I said it was definitely human -
because it was an 'i.e.' in brackets.

α:But - so it's me 'sort of'?

β:Uhuh.

α:Is it me in a certain role?In other words as the questioner?

β:No.

α:But it's not simply me...

β:No.

α:How many questions have I asked?

β:Thirteen.

α:Thirteen?

β:That was fourteen!(laughs)

α:Cheat!...I don't see how it can be me and not me.I don't
see how it could only be me 'sort of'.Can I give up?

β:No.

α:I can't give up.

β:It's not entirely you.It's not you as a whole.That's a
big clue.

α:It's only part of me?

β:Yes!

α:Is it part of my anatomy?

β:Yes.

α: Is it part of my anatomy above my waist?

β: Yes.

α: Is it my head?

β: Yes. Part of it, yes.

α: Is it my eyes?

β: No.

α: Is it my brain?

β: No.

α: Oh, crumbs.

β: Two left.

α: Help!

β: Now you had a big clue a while back.

α: What was it?

β: I said it was a clue.

α: Oh, crumbs.

β: I said you were close.

α: Could you take it out of me and put it somewhere else?

β: (laughs) Well, I suppose you might, but it would look most peculiar. I'll say 'no' to that.

α: No...

β: You wouldn't function properly without it where it is.

Now you have to have a guess now.

α: I have to have a guess.

β: I'll give you a big big clue, O.K.?, so's you get it right.

Well, it's prominent.

α: Is it my nose?

β: Right.

α: Ah dear! (laughter) Oh no, that's awful - what does it say?

β: Questioner's nose.

α : Oh, for gosh sake!

β : Yes, I was just thinking of a nose at first. You see that's why I said animal - or human.

α : Oh dear.

β : I apologize for misleading you for the first two or three questions.

α : That's all right. I'm glad I guessed it even though I guessed it the last thing. It's a shame you didn't give me a clue about Gogol or something like that!

Game 21

α : It's animal.

β : Is it alive?

α : Um...yeah.

β : Is it a land animal?

α : Um, yeah. Mostly.

β : Is it a mammal?

α : Yes.

β : Is it found in Britain?

α : Yes.

β : Is it a domestic animal?

α : (Pause as she writes notes) You asked for land mammal, right?

β : I asked for land -

α : You said land, you said mammal, you said found in Britain...

Is that three? Four?

β : Three, I think. No. I asked if it was alive also - so that was the fourth -

α : That was the first one - so we have had four.

β : We've had four... The fifth one then would be: is it a domestic animal? - domesticated animal?

α : Yes.

β : Is it found in suburban homes?

α : (laughs) Occasionally.

β : Occasionally - that sounds interesting... Is it found on farms?

α : Could be...

β : Is it non-human?

α : No.

β : Is it a specific human?

α : Yes.

β: Is it female?

α: No.

β: Is it - is he a Britain-wide - er, does he have a Britain-wide reputation?

α: I don't think so! No.

β: Does he live in Edinburgh?

α: Yes.

β: Is he associated with the linguistics department?

α: Yes.

β: Is he a member of staff?

α: Yes.

β: Is he a high-ranking member of staff?

α: No. Would you like a hint?

β: Um, no...thankyou. Is it me?

α: Sort of...

β: Sort of me? Is it a part of me?

α: Yes...You now have three more questions.

β: Is it part of my head?

α: Yes.

β: Part of my head...? Very difficult to narrow it down from there...

α: I know - you only have two questions.

β: I know. What shall I say? Is it identifiable as an organ?

α: It all depends what you mean by 'organ'...

β: Ah yes - can I have that question back? (laughs)

α: There are certainly some senses in which you would identify it as an organ - but there are certainly other senses in which you might not.

β: A sensory organ?

α: Yes.

β: Is it my nose?

α: Yes it is! The twentieth question - congratulations!

β: (laughs) Ridiculous!

α: You're pretty good!

β: I was so stupid though - not to think of human beings before, because the word 'animal' put me off, made me think of animals, and I think it was question eight or nine whether or not it was a human being. That was kind of dumb.

α: I was going to say to you at fifteen that it was a part rather than a whole, if you wanted a hint.

β: Yes, I see.

α: I really loved your progression from a low-ranking member of department to you!

Game: 22

β: It is vegetable and mineral.

α: Is it edible? - by people, I mean.

β: In the very widest sense of the word, yes... That's not a very helpful answer.

α: ...and it's vegetable - and probably not really edible...
Is it an implement?

β: No.

α: Not an implement... Is it a manufactured - that is, is it made by people?

β: Yes.

α: ...it is made by people... not an implement... Is it larger than this room?

β: No.

α: Is it in this room?

β: Yes.

α: Is it electronic in any way?

β: No.

α: Did I ask you if it was an item of apparel?

β: No, you didn't ask me.

α: May I ask you that? (laughs) I mean don't count that as a question! May I ask you, she says, staying (within...) - Is it an item of apparel?

β: It is not.

α: It is not... Is it a structural part of this room?

β: No.

α: Is it a piece of furniture?

β: No.

α: Is it - is it a long, thin object?

β: No... I wouldn't say so. You've had ten.

α: Yes, I've had ten....a vegetable and mineral object which is neither structural, wearable, electrical, nor an implement-

β: Correct.

α: -which is in this room and is not long and thin...and is edible in a very wide sense of edible...

β: In a very wide sense. (laughs)

α: Does it have writing on it?

β: Yes.

α: Is it a set of directions - instructions?

β:No.

α: I'd love to ask you why it took you so long to answer that question! (laughs)

β: I was thinking about why - I'm not sure!

α: Anyway, never mind - you're not supposed to answer that question.

β: Attribute my hesitation to stupidity.

α: But it has writing on it?

β: Yes.

α: Is it brownish?

β: No.

α: (laughs) You could do a brute force search in how many questions?!

β: Thirteen so far.

α: Is it on the table?

β: Yes.

α: Oh shit...Is it the last item to be guessed? - in other words was it the answer - the sheet with the answer on it for last time?

β: I don't understand your question, sorry.

α: That.*

(*pointing at slip with previous game object written on it)

β: No, it's not that. Now you've had fifteen now; would you like a hint?

α: Yes, please give me a hint.

β: The object in question is imported.

α: It's this cigarette box.

β: Yes.

α: All right.

β: Was that a very broad hint?

α: Yes... I'd been staring at the thing - shall I ask that next or shall I do things like - am I touching it, you know?
(bell rings as she touches it by mistake; laughter) - and then work from there since there's quite a lot of gundge on the table...

Game 23

α :It's animal.

β :Is it in this room?

α :Yes.

β :Is it sitting down?

α :Yes...Not it itself.

β :Is it on 'X'*?

α :No.

β :Is it on me?

α :Yes.

β :Is it above my waist?

α :Yes.

β :Is it below my neck?

α :Yes.

β :Have I got two of them?

α :No.

β :Nose?

α :Yes.

(*Person present in room, seated)

Game 24*

β :It's mineral.

α :Is the mineral metal?

β :No.

α :Plastic?

β :No.

α :Is it bigger than my shoe?

β :Yes.

α :Is it bigger than this room?

β :Yes.

α :Is it in or very near Edinburgh?

β :Yes.

α :Is it earth or something made from some form of earth?

β :No.

α :Is it solid?

β :Yes.

α :Could I stand on top of it?

β :You could...

α :But I wouldn't want to...?(laughs)Right.Is it a landmark?

I mean would you use it as a landmark to guide someone
somewhere?

β :Yes.

α :Is it stone or rock of some sort?

β :Yes.

α :Is it a building?

β :No...

α :I mean in the widest sense of the word 'a building',right?

β :No.(inaudible)

α :A construction on which human people -human beings move

around, or can move around...You're not answering?

β: I said no, it's not a building.

α: Could you see it from Princes Street, anywhere along Princes Street?

β: Yes.

α: Is it a historical monument?

β: Yes.

α: Let me recap a bit...It's made of stone, it's a historical monument visible from Princes Street. I could in theory stand on top of it...Is it the Scott monument?

β: Yes. That's fourteen.

Game 25(Japanese)

α:Shokubutsu desu ka? (Is it vegetable?)

β:Hai,sō desu. (Yes,it is.)

α:Hana ga sakimasu ka? (Does it grow flowers?)

β:Sakanai to omoimasu. (I don't think so.)

α:Ōkii desu ka? (Is it big?)

β:Ōkii desu. (It's big.)

α:Eto...kudamono ga arimasu ka? (Let's see...does it have
fruit?)

β:Arimasen. (No.)

α:Aki ni naru to ha ga ochimasu ka? (In Autumn do its
leaves fall off?)

β:Iie. (No.)

α:Ja...jōrokuju desu ne? (So...it's an evergreen?)

β:To mo iemasen. (You wouldn't say it was that either.)

α:Onshitsu no naka de sōdachimasu ka? (Is it grown in a green-
house?)

β:Iie. (No.)

α:Scotland ni mo - de mo miemasu ka? (Even in Scotland can
you see it?)

β:(shrugs) Ammari kankei arimasen. (That's not really rele-
vant)

α:Nihon ni arimasu ka? (Is it found in Japan?)

β:Arimasu. (Yes,it is.)

α:Ikutsu ni narimashita ka?...Jū-gurai....hana ga sakanakute...
shokubutsu de,happa ga ochinakute...koko de wa nakute,Nihon
ni wa aru'n deshō... (How many's that?...About ten...doesn't
have flowers...vegetable,doesn't shed its leaves...not found
here,but found in Japan,I guess...)

β:Un. (Mm.)

α:...ā,kō iu no baai wa ne...Nichijō ni tsukaemasu ka? (...ah,
in that case...Is it used everyday?)

β :Tsukau - iie,tsukau mono de wa arimasen. (It is - no,
it's not something which is used.)

α :Miru mono desu ka? (Is it something for looking at?)

β :Miru mono to mo arimasen. (It's not for looking at either.)

α :Taberu mono desu ka? (Is it something for eating?)

β :Ni chikai mono desu...(It's something close to that...)

α :Takai desu ka?- kau to takai desu ka? (Is it dear?- when
you buy it is it dear?)

β :Iie,takaku arimasen. (No,it's not dear.)

α :...ōkikute...Jū-gurai natta?...(...big...Is that about ten?..)

β :Jūyon. (Fourteen.)

α :Mo hitotsu ne?...miru mono de mo nai deshō?...zenzen wakannai
...Hinto - jūgo-gurai nattara - (One more,right?...not for
looking at?...don't get it at all...A hint - when it gets
to around the fifteenth question -)

β :Taberu mono ni chikai'tte... (I said it was close to some-
thing for eating...)

α :...mi ga naranai deshō...Tokai de mo miraremasu ka? (...no
fruit...Can it be seen in the city?)

β :Tokai-jū to mita koto ga arimasu. (It has been seen in the
middle of cities.)

α :Koko de kau koto ga dekimasu ka? (Can you buy it here?)

β :Dekimasu. (You can.)

α :Ie no naka ni arimasu ka? (Can you find it in houses?)

β :Yoku arimasu. (Often.)

α :Kyū ni fuyasu koto ga dekimasu ka? (Can it propagate rap-
idly?)

β :Dekimasu. (It can.)

α :Ueru koto ga dekimasu ka? (Can you plant it?)

β :Uwaserete imasen. (It's not planted.)

α :Nijū ja nai? (Twenty,isn't it?)

β :Mo hitotsu. (One more.)

...Kono hen ni arimasu. (...It's in this vicinity.)

α:Tsukue desu ka? (Is it the desk?)

β:Chigaimasu. (No.)

α:Kami desu ka? (Is it paper?)

β:Iie...Kami mo bubunteki ni shōsarete iru... (No...It's partly made of paper though.)

α:Hon ka?shimbun ka nanka?... (A book?or newspaper or something?..)

β:Nai.Miete imasu. (No.It's visible.)

α:...nanka na... (...what could it be...)

β:Taberu koto ni chikai... (It's close to something edible.)

α:Tabako? (Tobacco/cigarettes?)

β:Un.Tabako de keredomo - hyōgen chotto kaete kudasai. (Mm.It's tobacco,but please change the way you phrased it.)

α:Cigarette? (Cigarette?)

β:Un...iie,chigau. (Mm...no.)

α:...Hamaki to paipu to ka shurui? (Cigars or pipes or something of that sort?)

β:Iie,shurui de wa nai...Doko ni arimasu ka? (No,it's not a 'sort'of thing....Where is it?)

α:Tsukue no ue deshō?... (On the desk?...)

β:Tsukue no ue ni - (The what on the desk?)

α:Wakannai... (I don't get it...)

β:Tsukue no ue ni aru - (The - which is on the table.)

α:Tabako?... (Tobacco?...)

β: - no - ((The what)of (tobacco)?)

α:Tabako no - nani ka na?... (The - of tobacco - what could it be?..)

β:Miete imasu ne... (You can see it,can't you...)

α:Ippon no tabako? (One cigarette?)

β:Ja nai.Kazu wa kankei nai'n.Miete iru jōtai ieba ii;miete iru'n sono mono wo ieba yoroshii... (No.It's nothing to do with numbers.Just say what situation you see it in;the thing itself you can see...)

α:Filta no tsuite iru tabako to iu koto?... (Do you mean a filter cigarette?)

β: Sore wa kankei nai... Are wa nan desu ka? Asoko ni aru tobako no - ? (That's irrelevant... What's that over there? The cigarette - ?)

α: Suisashi? (Butt?)

β: Iie. (No.)

α: Tabako no hako? (The cigarette packet?)

β: Hako. (The packet.)

α: Tabako no hako?... De mo, tabako no hako to iu no wa - (The cigarette packet?... But the cigarette packet is -)

β: Matte - tabako mo haitte iru keredomo... Kara no baai mo attya nai?... Chotto aimai da kedo. Hitohako no tabako... (Wait - there are cigarettes inside it but... It could also be empty, couldn't it?... It's a little vague. One packet of cigarettes...)

α: De mo, ne, hako'tte iu to katai mono... (But still a 'packet of cigarettes' is when it's packed full...)

β: - iu keredomo, are mo hako ni naru wake - Nihongo de wa. Nai kara, fukoro to iwanai deshō... Fukoro 'tte ienai. (-but that's what it's called - that too is a 'packet of cigarettes' - in Japanese. You'd hardly call it a 'fukoro'*... It's not a 'fukoro'.)

α: Watashi wa tabako no tsutsumi 'tte iu. (I would call it a cigarette 'tsutsumi'*.)

β: Iie - iwanai. Tabako no hako 'tte iimasu yo. (No - you don't say that. You say 'tabako no hako'.)

*Respectively 'bag/container' and 'packet/wrapping'

Game 26(Japanese)

- α: Dōbutsu desu. (It's animal.)
- β: Kakōhin desu ka? (Is it a manufactured object?)
- α: Iie. (No.)
- β: Dōbutsu sono mono desu ka? (Is it an animal itself?)
- α: Sō desu. (Yes.)
- β: Sore wa kono hen ni orimasu ka? (Is it in this vicinity?)
- α: Imasu. (It is.)
- β: Honyūruī desu ka? (Is it a mammal?)
- α: Hai. (Yes.)
- β: Chiisa na dōbutsu desu ka? (Is it a small animal?)
- α: Dotchitomo iemasu: ōkii no mo chiisai no mo arimasu. (You could say either way: there are big ones and little ones.)
- β: Katei ni kawarete imasu ka? (Is it kept in the house?)
- α: Katei ni imasu. (It is found in the house.)
- β: Inu desu ka? (Is it a dog?)
- α: Chigaimasu. (No.)
- β: Ningen desu ka? (Is it human?)
- α: Sō desu. (Yes.)
- β: Sei ni kankei arimasu ka? (Has it got something to do with sex?)
- α: Arimasen... Ano - ningen no karada no ichibubun desu. (No... Well, it's part of a human being.)
- β: Sore wa miemasu ka? (Is it visible?)
- α: Jibun de miru - ? (To oneself -?)
- β: - koto wa dekimasen? (- it isn't visible?)
- α: Miemasu. (It is visible.)
- β: Sore wa kagami wo tsukaeba to iu imi desu ka? (You mean if one used a mirror?)
- α: Hai. (Yes.)
- β: Senaka desu ka? (Is it the back?)

α:Chigaimasu. (No.)

β:Kuchi desu ka? (Is it the mouth?)

α:Chikai desu. (Close.)

β:Aa.Shita desu ne? (Ah.It's the tongue,isn't it?)

α:Chigaimasu. (No.)

β:Hana! (Nose!)

α:Sō...Sore de,dare no hana desu ka? (Yes...But whose nose?)

β:Jibun no hana? (My own nose?)

α:Sō desu. (Yes.)

Game 27

α : The object is predominantly mineral.

β : Well you'll have to tell me what the other -the non-predominant part - is: mineral and - ?

α : Mineral and vegetable.

β : Is it moveable?

α : It could be moveable.

β : Is there one of these objects in this building?

α : No.

β : Do human beings need it in this country?

α : Yes.

β : Is it larger than my briefcase?

α : Yes.

β : Would one find it normally inside a house?

α : No.

β : Is its specific nature related to a human or to a place?

α : Can you rephrase that question?

β : Well, what I mean is, presumably you have a member of a class of objects; now the identification of this particular member, does it depend on its relationship with a person or does it depend on its relationship with a place?

α : With a place.

β : So let me think...

α : But the questions have to be phrased in such a way that I answer 'yes' or 'no'.

β : Well, wasn't it in the first place?

α : Perhaps, yes...]

β : Oh sorry, right.] So it's larger than my briefcase, potentially movable but not normally; it's needed by humans in this country, its specific nature is related to a place, and

it's largely mineral with some vegetable...Is there more than one of these objects in Edinburgh?

α:No.

β:Implication is there's only one of them in Edinburgh.Let's think...It's not Waverly Station by any chance?

α:It's not.I think you're assuming about something I haven't actually said.

β:Oh,is there one in Edinburgh at all?

α:Not 'in' Edinburgh...

β:Aha.Is it something which is useful to -or necessary to, rather - to humans as a group?

α:Um,yes...

β:....specific to a place...and there isn't one in Edinburgh ...Can I recap?There's not one in Edinburgh?

α:Depends how you define 'Edinburgh'.I'd say there is not one in Edinburgh.Not in Edinburgh.

β:It's not the Forth Bridge,is it?

α:Uhuh.Which bridge,though?That is the point.'The Forth Bridge' is not the exact answer.

β:Oh well,heads or tails - the Forth Road Bridge?

α:No.

β:The Forth Railway Bridge?

α:Yes.

Game 28

β :The object is animal.

α :Is this object in this building?

β :No.

α :Is it in Edinburgh?

β :Not as far as I know.

α :Is it in Britain?

β :Yes, as far as I know.

α :Is it a specific object?

β :Yes.

α :Is it larger than your briefcase?

β :Yes.

α :Is it larger than a house?

β :No.

α :Is it useful?

β :(laughs)I can't answer that question!Do I have to answer that question?

α :So the question doesn't count...

β :No.

α :Is it useless?

β :I can't answer that question either!

α :....it's between the size of a briefcase and a house...in Britain;specific...

β :And it's animal.

α :And it's animal.Is it a living animal?

β :Yes.

α :Is it a person?

β :Yes.

α :How many questions have I had?

β:Eight.

α:Is this person involved in politics?

β:I have to give an expanded answer.This person shouldn't be involved in politics.

α:Is this person male?

β:No.

α:The Queen?

β:No.

α:...female...shouldn't be involved in politics - that wasn't really very fair,was it?...Does this person live in London?

β:I don't know.

α:So that doesn't count.I think - I'm recapping - you did say that this person was not in Edinburgh but was in Great Britain...

β:As far as I know,yes.

α:Is it a person involved in entertainment?

β:No...No.

α:Is it Princess Margaret?

β:No.

α:Is it a person in the academic world?

β:No.

α:Is it a specific person?I mean,have I got to get a name?

β:Yes.That's not counted as a question 'cos-

α:Not counted.But it might be a mother or -

β:No,no,no.I mean it's not one of a class of objects.

α:...not politics,not entertainment,not the academic world
...a woman...not ~~entertainment~~ means not sport,very likely...

β :I'd be giving you a clue next question - can I give it to you now?

α :Yes.

β :Because of something you've just said.I hadn't thought of sport as being entertainment...

α :No.I was just thinking of possible fields for well-known women.

β :So when I said 'not entertainment' I was not excluding sport.

α :That's my clue...So it's a woman who's involved in sport.
Is it Princess Anne?

β :Yes.When you started asking 'Is she - is it useful or is it useless'-

α : (laughs) Yes! Useless, I think!]

β :Or entertainment -

α :Actually the answer to this is very very difficult because you gave it away when you said she shouldn't be involved in politics, which put me right on the royal family in a sense...But I mean, what can you say?

β :Yes, but you see how can I answer your question 'is this person involved in politics?' Well, in one sense no, in that she can't vote and is not a member of a political party and so on. In another sense very definitely involved in politics - she puts her foot in it so often.

α :Yes, very difficult.

Game 29(Japanese)

α : Dōbutsu. (Animal.)

β : Dōbutsu desu ka... (Animal, is it...)

α : Ikimono desu. (It's a living thing.)

β : Ikimono, ikimono desu ne... Dōbutsuen ni imasu ka? (Living thing, living thing, right... Does it live in a zoo?)

α : Imasen. (No.)

β : Dōbutsuen ni wa inai... Sō suru to, kachiku desu ka? (It doesn't live in a zoo... In that case, is it a domestic animal?)

α : Chigaimasu. (No.)

β : Kachiku de mo nai... sunde iru tokoro wa... Tobemasu ka? (It's not a domestic animal... lives in... Can it fly?)

α : Tobenai deshō ne. (I guess it can't.)

β : Sore jā... oyogemasu ka? (Well... can it swim?)

α : Kanari oyogemasu... (To some degree...)

β : Kanari oyogemasu ne... Sore de... oyogeru... Umi ni imasu ka? Soretomo kawa ni imasu ka? (To some degree... Then... it can swim... Does it live in the sea? Or in a river?)

α : Riku deshō ne. Fudan wa ne. (On land. Normally, that is.)

β : Fudan wa riku de... Sō suru to, ryōseirui desu ka? (Normally on land... Would it be amphibious then?)

α : Chigaimasu. (No.)

β : ...oyogeru keredomo... umi ni mo inai, kawa ni mo inai... fudan wa riku de kurashite wake desu ne... ryōseirui de mo nai... hachūruī de mo nai - (...it can swim but... it lives neither in the sea or in a river... because it normally lives on land... it's not amphibious... nor is it a reptile -)

α : Nai desu ne. (No, it's not.)

β : Sore de, honyūruī? (A mammal then?)

α : Honyūruī desu - honyūruī ni zokusuru deshō... seikaku ni iu naraba zokushimasu ne... (It's a mammal - it probably

belongs to the mammals...strictly speaking it belongs to them...)

β: Honyūruizoku to iu koto wa tsumari akachan wo umu koto desu ne? Tamago wa nakute... (A mammal gives birth to babies, doesn't it? Without an egg...)

α: Mā... Sono dōbutsu wa akachan mo umu deshō, ne... Nan to iu ne?... Kanari gutai-teki desu kara ne... (Well... I suppose this animal also has babies... What can I say?... It's something pretty concrete, you see...)

β: Sono dōbutsu wa ikimono de - (This animal is a living creature-)

α: Mā, kōbutsu ja nai, kedo... (Well, it's not mineral, but...)

β: Soshite ikite iru nai'n mono desu ka? Kakōhin desu ka? (Then it isn't living? Is it a manufactured object?)

α: Ikite iru mono desu ne. (It's a living creature.)

β: Ikite iru mono desu ka, ne... De, kodomo mo - (It's a living creature, right... And (it can have) a child -)

α: Kodomo wa nai, kedo mā... (It's not a child, but, well...)

β: De, hachūru de wa nai, honyūru de aru to... kachiku de mo nai... (And it's not a reptile if it's a mammal... nor is it a domestic animal...)

α: Ima jūichimon-gurai desu. (That's about eleven questions.)

β: ...mizu no naka ni iru... tokidoki wa... (...found in the water... occasionally...)

α: Amari ōkiku kangae ga hōgai desu. Kanari gutai-teki da kara... Nan to ka, nan to ka?... (Your ideas are too high-flown. It's something pretty concrete, you see.. What can I say, what can I say?...)

β: Akachan desu - kodomo-mitai na mono desu ka? (Is it a baby - something like a child?)

α: Sō ja nai desu ne. (No, it's not.)

β: Jā, seichōshita otona no ikimono desu ka? (Well, is it a fully grown creature?)

α: Nan to iu ka na! (What can I say!)

α: Betsuni kodomo to kankei nai 'n de mo... sugoku 'specify' sareru to - dare no, doko no nan to ka kanji de ne... Bakuzen to ieba - tatoeba, ne: empitsu de, empitsu ja nakute, dare-dare-san no empitsu da - so iu kanji da... kanari 'specify'-sareta ... (It doesn't have any particular connection with children... if you were to be much more specific - asking sort of whose it is, where it is, etc... Roughly speaking - for example: if it were a pencil, it wouldn't just be a pencil, it would be Mr. so-and-so's pencil... something pretty specific..)

β: ...honyūru de... de wa, ningen... kachiku de mo nai... 'Petto' de wa nai desu ne. (...mammal... human being... not a domestic animal... So it wouldn't be a pet...)

α: Petto ja nai deshō ne. (It wouldn't be a pet.)

β: Ningen no seikatsu to kankei arimasu ka? (Does it have any connection with human life?)

α: Arimasu ne. Hijō ni arimasu ne... (Yes, it does. Very much so...)

β: ...mizu ni yoku ite... ningen ni kankei ga aru... (...often found in water... to do with human beings...)

α: Gutai-teki na no - kikan da kara... Ningen to iu ka no nakute ne, tatoeba - ningen no te to ka: sore wa motto gutai-teki ni - tatoeba ningen no dare-dare-san no nan to ka... Sugoku gutai-teki sarete iru kara. Sono 'point' de kiite kudasai. (It's something concrete - it's an organ... It's not a human being or anything like that - for example, something like a human being's hand, but more concrete - for example, a Mr. so-and-so's something. It's very concrete. Ask along these lines.)

β: ...dōbutsu... mizu ni kankei... Mizukaki to ka ja nai ka? (...)

animal...connected with water...Would it be webbed feet?)

α:Ma!...Kikan da kara... (Goodness!...Look,it's an organ...)

β:Ningen? (Human?)

α:Ningen desu. (Human.)

β:Ningen no kikan...Teashi? (A human organ...A limb?)

α:Chigaimasu ne. (No.)

β:Jā...mizu ni kankei... (Hm...connected with water...)

α:Oyogenai'n - ningen da kara oyogeru kedo,kono baai wa kan-
kei zenzen nai. (It can't swim - that is,since it's human
(you can say)it can swim,but that circumstance has nothing
whatsoever to do with it.)

β:Ningen no kekkan? (A human being's veins?)

α:Chigaimasu.Ningen ja nakute ne,watashi no doko ka,anata no
doko ka - kikan desu ne - ware-ware ni tsuite imasu. (No.
It's not a human being,it's somewhere on one of us - it's
an organ,right - joined to (one of) us.)

β:Hana? (Nose?)

α:Ano!...(There!...)

α: Animal.

β: Human?

α: Yes.

β: A person?

α: Yes... Well, I take it that's what you meant by the first question. So I won't count that.

β: No, 'cos it could be part of a person.]

α: Oh, all right, if you insist.

β: Right, that's two questions... Female?

α: Yes.

β: Does she live in Edinburgh?

α: No.

β: Have I ever met her?

α: No.

β: Do you know this person?

α: No.

β: Is it somebody famous?

α: Yes.

β: Somebody famous, female, who lives in Edinburgh -

α: I said didn't live in Edinburgh. That's eight.

β: Is she English?

α: Yes.

β: Can I recap? It's somebody famous, doesn't live in Edinburgh. Did I ask if you knew this person personally?

α: Yes, you did.

β: And what did you say? (laughs)

α: I said no.

β: So is it somebody like a member of the royal family?

α: What do you mean 'like' a member of the royal family?

β: Is it a member of the royal family?

α: No. Ten.

β: An actress?

α: No. Eleven.

β: A singer?

α: No. Twelve.

β: A politician?

α: Yes.

β: Maggie - what's-her-name - you know - Thatcher.

α: Yes.

Game 31

β It's animal.

α Human?

β Yes.

α A particular person in the department?

β No.

α Somebody known to me-by name?

β By name, yes.

α English?

β English.

α Public figure?

β Public figure, yes.

α Politician?

β No.

α Writer?

β No.

α Entertainer?

β No.

α What else is there in the world besides politicians, writers and entertainers?...A public figure, neither a writer, politician or...Would I know this person by virtue of their - what do I mean? - primarily their office?

β In a sense...Certainly by virtue of what this person is...

α Male or female?

β Female.

α It can only be the Queen, then?

β No.

α What somebody is, who's female...Oh, is it a public figure? Yes, you said that.

β You're not too far off, actually...And it may or may not be helpful to say she might also for part of the time be considered an entertainer, but that's secondary...

α A member of the royal family?

β A member of the royal family.

α Oh, is there any useful subdivision I can make or do I just have to ask names?...I can't really think of one.

β You've got several questions left, so you might as well.

α O.K..I was trying to think of the most economical way of rounding up the royal family...Er, Princess Anne?

β Princess Anne, right.

Game 32

α : O.K. It's mineral.

β : Mineral? Is it metal?

α : For the most part.

β : Do you use it?

α : Is that an impersonal 'you'?

β : Does one use it - is it an object which is used?

α : Yes.

β : Does one use it indoors?

α : No.

β : In the street, as opposed to the countryside? In the street?

α : No...

β : Not in the street. In the garden?

α : No.

β : In the countryside?

α : It is in the countryside.

β : It's in the countryside. Is it static?

α : Yes.

β : It's static. It's not something like an electricity pylon?

α : What do you mean 'like an electricity pylon'?

β : Is it an electricity pylon?

α : It isn't, no.

β : ...it doesn't move... Is it some form of shelter? or building?

α : A building, certainly - in the sense of a structure.

β : Yes, that's what I was trying to get at with the electricity pylon. It's a structure but doesn't give any shelter.

α : Yes.

β :The Forth Bridge?

α :Which one?

β :Oh well,when I was a schoolboy - the one you paint incessantly...I suppose it's the new one.

α :No,it's the other one.

β :It's the old one,is it?

Game 33

β: The first object is vegetable. Almost entirely I would say, though there may be little mineral bits -

α: Sh! Is it made of wood?

β: Indirectly, parts of it.

α: Is it made of paper?

β: Of a sort.

α:I'm absolutely blank!...Is it made of cardboard paper?

β: Yes, I should say so. Principally.

α: Is it a box?

β: Yes.

α: Is it a box for - which contains food?

β: Er, no.

α: Is it a box which is a container?

β: Yes. It's a box which contains certain objects.

α: Ah, that's a different question. Is it a container? Such as the producer of a product would put -

β: Quite, yes, it is.

α:it's a box which is a container...

β: And made of cardboard...

α: -made of cardboard: a cardboard box. Is it? A large box, is it more than three feet cube - I mean, side by side by side, three feet in each dimension?

β: No, it's smaller than that.

α: Is it more than two by two inches?

β: Probably - no, well, it's round about that.

α: It's a small cardboard box which is a container...Does it contain anything that's used in this department?

β: Not by the department as a department.

α: It contains things that might belong to individuals?

β: Yes.

α: Am I better off looking for the things that belong to the individuals?

β: You're well off enough, I should say!... That's ten questions so far.

α: More or less.

β: I'm sorry, what was the last question?

α: The last question is: am I - would you kindly advise me with a yes/no answer - the form of the question is: am I better off pursuing the contents or the box? No, no - would I be better off pursuing the contents?

β: I should say so, yes - in the sense that you'd be more likely to arrive at the kind of box if you pursue the contents... I'm afraid I'm giving you more information than the rules of the game permit!

α: You did say metal, didn't you, might be rattling about in it, so it's clearly not something like a matchbox...

β: I said mineral, yes, but I may be wrong on that because I may simply be ignorant.

α: It's not a matchbox?

β: Sorry? It's not a matchbox, no. No, what I said, I'd better clarify that point, is that part of the object may be - may have mineral -

α: -associations?

β: -components or associations or -

α: Would that be to do with things like metal clips on its

edges?

β: Well, it's that kind of thing, but it's not that in fact.

α: Are the metal -

β: I think I must be leading you up the wrong -

α: - garden path!

β: - the wrong garden path, yes! I wouldn't want you to pursue the notion of metal too much, O.K., what I said actually was mineral. But I may even be wrong about that. I'm quite ignorant about what the source of this particular substance is.

α: Do you have plastic in mind?

β: No.

α: Is it a box such as I would have in my house?

β: I've no doubt there is such a box in your house.

α: Would it contain something which I own?

β: I'll give you a clue at this point, which I'm allowed to do because it's your fifteenth question. The clue is that if you think in terms of a particular kind of box for which we have a separate lexical item in the English language then this would be exceedingly helpful to you - you might get it in one.

α: You mean something like a musical box? -

β: - 'cos there's a separate lexical item for this - we have a hyponomous relationship -

α: Oh God!

β: And what you are seeking is the subordinate item - I should say, though it could be arguable... Let me recap: it's a box which is a container which a manufacturer puts things in and if you think of boxes which manufacturers put things in then characteristically we don't call them

'boxes', we call them something else, and -

Α: Oh God!

Β: And I think if you could somehow dig out this pseudo-hyponomous expression, um... It's a matter of collocation.

Α: Yes, well, I'm clearly walking up so many wrong paths; I do think this is nicer when you have a team!... A less than two inches square container made of cardboard, which is not called a box...

Β: And which has specific things inside it.

Α: And which has specific things inside it. And clearly it doesn't contain food of any sort.

Β: It doesn't contain food.

Α: So it's not a 'Smarties' packet - that isn't a question.

Β: I take that as a question.

Α: It isn't a question! You said it didn't have anything to do with food so I know it's not a 'Smarties' packet.

Β: O.K. But if the question is 'is it a packet rather than a box?' the answer to that question is 'yes' - and I'm putting it down for another question.

Α: Yes, can it be a cigarette packet? A packet of cigarettes?

Β: Which particular packet of cigarettes?

Α: Oh... Which particular packet of cigarettes? I bet people who smoke do it fourteen times as rapidly as people who don't!... A 'Benson and Hedges' packet of cigarettes?

Β: I don't think it's a generic particular, but which particular particular?

Α: Whose packet of cigarettes?

Β: Well, your last question - you're on your last question:

this is question twenty. You actually have to guess now
the particular packet of cigarettes.

α: The packet of cigarettes which is over there. (points)

Game 34

α : Well, I believe it has to be animal.

β : Ah, I've got to ask you questions.

α : The roles are reversed.

β : Is what it is made of a significant fact in determining what this object is?

α : What an impossible question! Well, yes. I suppose the answer is 'yes'.

β : Is it made of some sort of - transformed animal product? Like, for instance, butter is a transformed animal product. Or is it some direct animal product like a skin or a horn or something of that sort?

α : Which question are you asking?

β : Well, it's a yes/no question, I mean, so -(laughs) Is it a transformed animal product like butter?

α : No, it's not transformed like butter.

β : Is it therefore something made from some surface part of an animal?

α : I suppose the answer is 'yes'. But it might be a misleading answer.

β : Would you like to develop that?

α : Not at all! (laughs)

β : ...some surface part of an animal... Is it something people consume?

α : No, people don't consume it.

β : Is it something people use as an implement?

α : No, people do not typically use it as an implement.

β : Is it something people use out of necessity or in order to make their lives more comfortable?

α: Out of necessity.

β: Is it to do with clothing?

α: No, it's not to do with clothing.

β: Is it to do with transport?

α: It's not to do with transport. What an excellent question-asker you are. How quickly they flow.

β: ...Well, I'm stumped. (laughter)

α: That's eight.

β: That's eight; how alarming. I must recap a bit. It's animal; it's in direct link with the animal, it's not some totally transformed product. It's not to do with transport and it's not to do with food and not to do with clothing - you did say it's not to do with clothing, didn't you?

α: I don't know! (laughs)

β: It's obviously not - ...and it's a matter of necessity, not of luxury. And it's to do with the surface of the - it comes from the surface of the animal rather than its innards - though you hedged a bit on that one. Perhaps we're in the area of fat, blubber, sub-cutaneous matter of some sort - are we? Are we super- or sub-cutaneous? Are we sub-cutaneous?

α: Yes... Well, it's not possible to answer that question without being misleading. Yes or no. I shan't count it. (laughter) 'Both' is the answer. So I shall jolly well have that - and I'm not sure I shan't have it twice, answering 'yes' to both parts!

β: Is it to do with hair?

α: No, it's not to do with hair.

β: Or anything like hair? - and that's the same question.

α: It's not at all the same question! What is 'like hair'?

β:I was thinking of fur.

α:It's not fur.

β:Pilum generally?(laughter)

α:No,it's not that either.

β:That was purely anaphoric,it had no substance!You can cross that out.

α:O.K.I'll take that away.You've now had eleven.

(etc.:The object was the questioner's nose,not guessed.)

Game 35

α Animal.

β Has it got two legs?

α No.

β Is it male?

α No.

β Do you find it in this country?

α Yes.

β Is it domestic?

α No....

β Well, domestic in the broadest sense - domestic in the sense of not necessarily you keep (it) in your home, but not wild.

α Er, I think I'll say no, otherwise I'll put you off the track unfairly.

β Does it need a particular kind of terrain?

α Yes.

β Mountainous?

α No.

β Does it have a tail?

α No.

β And it doesn't have two legs...Does it have four legs?

α No.

β Does it come into the insect category?

α No.

β Hasn't it any legs at all?

α Correct - it has no legs.

β Ah - it has no legs...and a particular kind of terrain...
Something like an earthworm?

α No.

β Does it come out of its habitat in certain conditions?

α No. I think I'll warn you even at this stage that you're not getting onto the right track.

β So it's something that comes from an animal, not an animal itself?

α It's not an animal itself.

β No. It's a product of animal...

α No, it's not a product of an animal...

β It's not animal itself and it's not a product of an animal...

α It's not an animal itself.

β Not an animal itself but it is animal... Do human beings do anything with it - do they use it for anything?

α I must answer yes there, they do.

β Reluctantly.

α I'll give you a clue... I want to give you a clue without being too obvious... Humans do something with it... What can I give you as a clue?... Perhaps this might make it easy, but I think I'll give it to you. Don't think of a whole item.

β Oh... And it's not the product of an animal... either that the animal produces it or that man extracts it from the animal...

α No.

β Glory be! And it's part of something... Anything connected with clothing?

α No... But in a sense you're getting warm.

β Ah. Not clothing.... To do with furniture?

α No...

β Have you got one?

α Yes I have.

β Do you think I've got one?

α You certainly have. That's nineteen so you've got to guess now. I'll give you one very generous clue, O.K.? Every person in the world has one.

β Good grief!... This is only part of it...

α Well, what it is is identifiable, but it belongs to a whole.

β Is it one's hair for example?

α No, but you've got very near. It's your nose.

Game 36

β : It's vegetable. I beg your pardon - it's a mixture of vegetable and mineral.

α : A mixture of vegetable and mineral. Is it then a product?

β : Yes it is.

α : Is it something we eat?

β : No.

α : Is it something we wear?

β : No, it isn't.

α : Is it something that we use in the house? - in the widest sense?

β : No.

α : ...not something we eat, not something we wear, not used in the house... Does it have any industrial or commercial use?

β : Use, no.

α : So if it has no actual use - is it something purely decorative?

β : No, it isn't.

α : Is it functional in any way?

β : Yes. Well, you could say it was functional, yes - perhaps not in the strictest sense, but in the broadest sense, yes... But I might be misleading you saying that...

α : You said it was both - or a mixture of - vegetable and mineral -

β : Yes, but concentrate on the vegetable.

α : Ah, quite - I needn't ask that question now! Does it stem largely from something grown?

β : Yes, it does.

α : Does it need to be processed before we have it?

β:Yes, it does.

α:Is it found in every country?

β:Yes, it is.

α:Do we see it every day around in the streets?

β:Oh yes - well, this particular object, no. The object in general, yes; the specific object on the paper, no... I've given you quite a clue there.

α:You have, have you? Thank you! I must try and interpret that!

β:A specific one of a kind. Try and sort of localise your questions...

α:Do we see this - inside buildings?

β:Mm...

α:Is it a necessary part?

β:No.

α:...inside and it's not decorative and not basically functional...

β:No...

α:Do people have it?

β:Ooh... Do people have it?

α:Let's ask a different question: do people have it unintentionally?

β:No.

α:Is it something we buy?

β:Yes.

α:Is it something we use to make another product?

β:No.

α:How many questions is that?

β:That's fourteen. Try and localise your questions geographically.

α: Right. Is this limited to certain climates?

β: Oh no. When I say 'geographically' I don't mean in the world sense.

α: A much more local sense... in a building... Is it found only in one part?

β: Well, this particular one is only in one part, yes.

α: Is it something we use at all in building? In actually constructing?

β: No, no... That's seventeen. Oh dear, what can I - apart from telling you to sort of -

α: - tell me what it is -

β: - bring your - um... What else can I say? I think you'd need to look about you...

α: Is it in terms of history a fairly recent product?

β: No.

α: No?

β: 'In terms of history' depends on how far back you take history.

α: Twenty, forty years, something like that.

β: Oh no... Eighteen.... I'll tell you: it's in this room.

α: It's in this room?

β: You've got two to go.

α: Two more.

β: It's vegetable and it's processed - and it's got a little mineral in it.

α: Most things seem to me to have a very clear function... God... I'm really stuck... Do we use it for writing in any way?

β: No... You've got one question: You're at nineteen.

Q:I've done nineteen - or eighteen?

P:Done nineteen, yes. One to go.

Q:I'm supposed to guess, aren't I, in fact, in that case?

P:Yeah...It's not British.

Q:I suppose there's that -(taps something; laughs) Certainly not vegetable though...Oh God, I don't know - rubber?

P:No. It's the packet of cigarettes on the table! There was I moving my bag and the batteries so that it wouldn't - the line of vision wouldn't be obstructed! Were my answers misleading?

Q:No, no, I don't think so, um...

P:'Cos I wouldn't -. It is functional in a certain sense, but not in the normal sense of the word 'functional'.

Q:No, I think that's perfectly reasonable. I should have got from, um...I suppose what put me off was 'decorative'. I mean, what put me off in a sense when I asked the question was, I mean, I ruled out, I tended to rule out anything we do that is not functional, you see.

P:Ah - sort of considering -

Q:Clothes and luxury things like that. No, I think the question was a fair- .I've done this game quite a lot, but only with people. I should have got that.

P:Do you think I should have given you more help?

Q:No, I mean what could you say? 'People put them in their mouth' would be a fairly obvious clue.

P:When I said that it was in this room I thought that surely must lead you on - mind you it's fairly squashed - and it's only got one cigarette in it!

Game 37

α : Animal.

β : Is the animal human?

α : Yes.

β : Is the animal - is the human male?

α : No.

β : Is the female adult?

α : Yes.

β : Is she alive?

α : Yes.

β : Do you or I know her personally?

α : No.

β : Is it a well-known person?

α : Yes.

β : Is it Margaret Thatcher?

α : No.

β : Is she British?

α : Yes.

β : Is she a celebrity of what one might call show business,
as say films, theatre and so on?

α : No.

β : Is she involved in any way in politics, even remotely?

α : No.

β : Is it the Queen?

α : No.

β : Is it Princess Margaret ?

α : No.

β : Is it Princess Anne?

α : Yes. Well done. How many did you get it in?

β : Thirteen. It was a fairly easy one actually.

β: The object is mineral.

α: Is it made from a raw mineral product - in other words, is the finished article made of something different from the raw mineral?

β: Can't understand the question - not precise enough.

α: Well, say plastic, for instance, is not what I would call a raw mineral. The answer would then have been 'no' if it was a plastic pen or something like that.

β: Yes, I see... I'm not quite sure if I still see. I've still not pinned down-

α: Just forget it and we'll -

β: Just forget the question, right... I'm not quite sure what you mean by 'made from'...

α: Is it an instrument of some kind?

β: No.

α: Is it something found in every country in the world virtually?

β: This is a specific object, remember - (I) won't count that as one as a question. You'd forgotten the rules.

α: Is the specific object to be found in Scotland?

β: Yes.

α: Is it specific by dint of belonging to a particular person?

For example - a particular Scottish M.P.'s ball-point pen?

β: No, no. It doesn't belong to any person or family or anything like that.

α: Is it a well-known landmark or symbol or sign?

β: Uh... I think you could say yes, it's one of those, yes.

α: Is it large?

β: Very.

α: Is it either in Edinburgh or within a fifteen mile radius of

Edinburgh?

p: It is.

a: Is it a bridge?

p: Yes.

a: Is it one of the two Forth bridges?

p: Yes.

a: Is it the rail bridge?

p: It is. Well done, that's very quick - in fact you crossed

it before you got there. That's nine.

Game 39

β :Animal.

α :Human animal?

β :Yes.

α :Part or whole of a human animal?

β :Whole.

α :Male or female?Sorry,this has got to be yes/no.Male?

β :No.

α :....specific person....A member of the department?

β :No.

α :By 'member of(the)department I meant either as a lecturer
or as a student.

β :No.Question number six.

α :Is this a celebrity?

β :From television?Nope....Probably has been on television
though.

α :But is not a -

β :No.

α :By that you mean does not appear regularly on television?

β :Yes.

α :Sportsperson?

β :No....You've had eight questions.

α :Is it a person of similar standing to a member of the
royal family?

β :Yes....

α :Is it the Queen?

β :No.

α :Oh,shit...

β :The previous question is a bit difficult to answer in

fact.

α: Oh!

β: Perhaps you could rephrase it -not 'is it the Queen',
the one before that.

α: Well, is it a member of the royal family?

β: Yes.

α: But it's not the Queen...and it's female...

β: Come on, this is limited!

α: Is it Princess Anne?

β: Yes! Eleven questions that was.

α Mineral.

β Is it made of metal?

α Yes.

β Is it in this room?

α No.

β Is it a specific named object ? -with a name, as opposed to a thing like a tape-recorder...

α Do you mean - ?

β Like 'David's hat', right?

α It is one specific one, yes.

β Which is recognizable from the name?

α Yes.

β Is it a piece of machinery?

α No, you wouldn't really call it that.

β Is it in the department?

α No.

β Ah... Completely made of metal?

α I don't know for certain, but you can take it as 'yes'.

β Is it small enough to carry?

α No... That's about seven, I think.

β No, it's about five!

α Six.

β Can you live in it?

α No.

β Is it a means of transport?

α No.

β And it's not machinery?

α It's not machinery.

β Is it pretty?

α You mean do I think it's pretty?

β No, I mean is it decorative?

α Oh, no.

β Functional then?

α Yes.

β Is this in Edinburgh?

α Strictly, no...

β Does it move about?

α No.

β Is it outside Edinburgh? In sort of - around Edinburgh somewhere?

α Yes.

β Is it bigger than a house?

α Yes.

β (I) probably don't know what it is - if it's anything...

α No, I'm sure you know it.

β And it's not a building?

α No.

β Yes, you said that before. So it's made of metal, it's not a building... Did you say it was functional or pretty?

α Functional.

β It's not a vehicle, not a piece of machinery, it's completely made of metal, it doesn't move about, and it's near Edinburgh...

α Yes.

β Sure it doesn't move about?

α Yes. Positive.

β (I) give up, can't think what it is!... You can't get inside it?... Is it for getting inside?

α No.

β Is it solid?

α If you define solid a bit more-

β I mean, is it a solid lump of metal - like a house?

α Er, yes, er...

β Is it tall and thin?

α It's tall...thin...

β Have I seen it ?

α Yeah, I'm sure you must have.

β Is it some kind of radio pylon or something like that? A television thing?

α It's not a radio pylon, no.

β I mean, is it some kind of transmitting thing or - or a super-structure made of bits of metal?

α It's a kind of construction like a - yes.

β Like a pylon?

α Yes!...

β Is it north or south of Edinburgh?

α North...

β The bridge!

α It is a bridge, yes...

β Well, what's it called? The bridge like this (gesture)? Or that one (gesture)?

α Yeah!

β The suspension bridge?

α No.

β The other one - the railway bridge?

α O.K.. The Forth rail bridge.

Game 41

α : It's mineral.

β : Is it pure mineral?

α : I should think - yes.

β : Has the mineral been through any sort of process?

α : Yes.

β : Is it in liquid form?

α : No.

β : Solid.

α : Yes, very solid.

β : Very solid? Come on... So it isn't porous or something?

α : No.

β : That wasn't a question.

α : O.K. So that's four.

β : O.K.... so it's solid and it's mineral. Is it coal?

α : Is it coal? No.

β : Is it some kind of metal?

α : Yes.

β : Is it used in this room?

α : No.

β : Is it used for construction?

α : The object already exists for a certain purpose...

β : Ah...

α : Clue: in other words the object made of mineral substance exists for a certain purpose somewhere in the world.

β : I see, right. Is it a machine?

α : No.

β : ...and it's mineral and it's very solid... Heavens.

α: There's only one.

β: Only one in the world.

α: Yes, there's only one in the world.

β: There's only one in the world?? My goodness.

α: Yes, there's only one. This particular object is one thing.

β: Oh, I see... Have you seen it?

α: Yes.

β: Do you see it often?

α: Yeah...[↗] What do you mean by 'often'?

β: Do you see it every day?

α: No.

β: Is it a building?

α: No.[↗]

β: That was a qualified 'no'!... It's not a building; it's been as a very solid object... Is it a road?

α: No.

β: ...it's not a machine, so it can't be a car or anything... can't be a heater or anything... not in this room, so it's not tables and chairs... I think I'm stuck.... and it's mineral and it's been processed...

α: Do you want another clue? I probably see it once every few months.

β: Once every few months... and it's not a machine... Does it stay in the same place?

α: Yes.

β: (laughs) Very solid and it stays in the same place! And it's not a building?... What else stays in the same place?

α: Oh, lots of things...

β: Not many things, most things are moving... What about a

sculpture of some kind?

α: No. Sculpture in the sense of art form, no.

β: So it's not an 'art form'.

α: No.

β: Sculpture can be in another sense, can it?

α: Don't take that as any kind of a hint, it'll just mislead you.

β: I don't think it really matters, any kind of leading, whether it's misleading or - (laughs) You're welcome!... Is it a bell of some kind?

α: No.

β: No, that would be a machine, wouldn't it, sort of... It's not an art form, so it's a non-art form... It's not a construction - didn't you say it wasn't a construction?

α: No, I didn't say it wasn't a construction.

β: It is a construction?

α: Yes.

β: It's not an art form - it could be that monstrosity at the top of Leith Walk, which is decidedly not an art form.

α: (laughs)

β: But you laughed so I won't ask that question!

α: That's a sneaky way of getting a question answered!

β: This is too difficult for me.

α: Do you want another clue?

β: Is it a harbour or something?]

α: Very close - you're getting there.

β: Leith docks?

α: No... You pass over it.

β : A bridge!

α : Yes. Which bridge?

β : South Bridge?

α : No.

β : North Bridge?

α : No!

β : George the Fourth Bridge?

α : No! What's it made of?!

β : The Forth Bridge?

α : The Forth Rail Bridge!

Game 42

β It is animal.

α Is it non-human?

β No.

α That means it's human...Is it a person, an individual person?

β Yes.

α Is it someone you and I know - know, you and I know? (laughs)

β Oh dear, quite a grammatical error to go on tape!

β Shows you're being natural!...Not personally.

α So it's someone that we know but we've never met?

β Probably.

α Are you sure I've never met this person?

β Pretty sure.

α Is the nationality of this person Western? That is, American or European as opposed to Eastern, Asian countries?

β Yes.

α American?

β No.

α British?

β Yes.

α Is this person well known to many other people?

β Yes.

α Is he a political figure?

β Mmmmm...

α Is he or she a political figure?

β No.

α Oh - is it a man or a woman - is it a man?

β No.

α It's a woman, then.

β Yes.You been keeping count?

α No.

β Call it ten,then.

α British,known to many people...but not politics...Is this person's occupation in the field of entertainment?

β Not really...

α But almost?...Entertainment meaning very widely anything to do with the media at all,as well as acting and musicianship and stuff...

β This person could be involved with the media...

α Could be involved with the media...

β Often is involved with the media.

α Often is involved with the media.

β Is this person an employee of the B.B.C.?

β I don't think so!(laughs)

α Oh dear,what does that mean?

β No,I don't think so.

α Is it a sports personality?

β Yes...

α Is it Princess Anne?

β Yes!What a flash in the dark!

GAME 43(Russian)

α: Eto iz zhivotnovo mira? (Is it animal?)

β: Da. (Yes.)

α: Eto chelovek? (Is it a human being?)

β: Da. (Yes.)

α: Chelovek kotory zdes v etom pomeschenii? (A human being here in this room?)

β: Net. (No.)

α: Chelovek kotorovo ya znayu? (A human being I know?)

β: Gm...Nemnozhko.Vozmozhno. (Hm...A little.Possibly.)

α: On v toy laboratorii? (Is he in the laboratory there?)

β: Net. (No.)

α: Eto nash znakomy? (Is he an acquaintance of ours?)

β: Net. (No.)

α: Eto znamenity chelovek? (Is it a famous person?)

β: Izvestny. (Well-known.)

α: Izvestny v oblasti iskustva? (Well-known in the field of art?)

β: Net. (No.)

α: V oblasti politiki? (In the field of politics?)

β: Net. (No.)

α: Tak eto prostoy chelovek? (So it's an ordinary person?)

β: - no izvestny. (- but well-known.)

α: On russky? (Is he Russian?)

β: Net. (No.)

α: Anglichanin? (An Englishman?)

β: Da. (Yes.)

α: On sovremenny? (Is he a contemporary?)

β: Da. (Yes.)

α: Eto kto-nibud iz moevo nachalstva? (Is it one of my superiors?)

β: Net...Vyshe. (No...Higher.)

α: Vyshe...iz moevo nachalstva...Tak,mozhet byt,eto 'X'? (Higher...one of my superiors...So,perhaps it's 'X'?)

β : Eto vashe nachalstvo - ya skazala 'net'. (That's your superior - I said 'no'.)

α : Net. Vy skazali 'vyshe'. (No. You said 'higher'.)

β : Eshche vyshe. (Still higher.)

α : Togda eto mozhet byt v pravitelstve? (Then he could be in the government)

β : Ne sovsem. (Not altogether.)

α : Ne sovsem? Kto-zhe eto mozhet byt? (Not altogether? Who on earth could it be?)

β : Kto vyshe pravitelstva? (Who is higher than the government?)

α : Vyshe pravitelstva kto mozhet byt?! Vyshe pravitelstva kazhetsa nikto ne mozhet byt. (Who could be higher than the government? There would seem to be no-one higher than the government.)

β : V Anglii? (In England?)

α : V Anglii? Vyshe pravitelstva? A! Mozhet byt eto odna iz tsarstvuyushchich osob? (In England? Higher than the government? Ah! Perhaps it's one of the members of the ruling family?)

β : Vot imenno. (Exactly.)

α : Tak, mozhet, eto koroleva sama? (So perhaps it's the Queen herself?)

β : Net. Radom. (No. Next to her.)

α : Radom s ney - eto Prints? Edinburgsky? (Next to her - is it the Prince - of Edinburgh?)

β : Net. Eshche radom. (No. Somebody else next to her)

α : Mozhet eto sama Printsessa Anna? (Perhaps it's Princess Anne herself?)

β : Printsessa Anna. (Princess Anne.)

β: Mineralnoe veshchestvo? (Mineral?)

α: Da kak vam skazat? Pozhaluy ne mineralnoe - rastitelnoe. (What should I say? I suppose it's not mineral, but vegetable.)

β: Vnutri? V dome, v pomeshchenii? (Indoors? In the home, in the flat?)

α: Da. (Yes.)

β: V pomeshchenii... Dver? (Indoors... A door?)

α: Net. (No.)

β: ...mineralnoe - (...mineral-...)

α: Rastitelnoe. (Vegetable.)

β: Rastitelnoe... Evo edyat ili poyut? (Vegetable... Is it eaten or drunk?)

α: Net. (No.)

β: Ne poyut... A - nosyat na sebe? (Not drunk... Ah - is it worn?)

α: Net. (No.)

β: Na nyem pishut? (Is it written on?)

α: Net. (No.)

β: Ne edyat, ne poyut, ne pishut, ne nosyat... rastitelnoe vnutri doma... Tsvetok v gorshke? (Not eaten, not drunk, not written on, not worn... vegetable, indoors... A flower in a pot?)

α: Net. (No.)

β: Yolka? (A Christmas tree?)

α: Net. (No.)

β: Na nyom sidyat? (Is it for sitting on?)

α: Net. Na nyom ne sidyat. (No. It's not for sitting on.)

β: Za nim sidyat? (Is it for sitting behind/at?)

α: I za nim ne sidyat. (Nor is it for sitting behind/at.)

β: Gospodi, gospodi, gospodi... Na stene? (Heavens, heavens above... Is it on the wall?)

α: Net. (No.)

β: Na polu? (On the floor?)

α:Net. (No.)

β:Na potolke? (On the ceiling?)

α:Net. (No.)

β:Bolshe negde!...na polu net...vnutri...Evo izpolzuet na - Iz chevo on sdelan -iz dereva? (There isn't anywhere else!... not on the floor...indoors...Do people use it for - What is it made from - from wood?)

α:Net.Ne iz dereva...A po-moemy on ne v kazhdom dome,potomu eto tak - v obshche - (No.Not from wood...As far as I know it's not found in every house,so it's - in general -)

β:Ne v kazhdom dome? (Not in every house?)

α:Da.Nado byle bolee konkretirovat vashi voprosy. (Yes.You should make your questions more specific.)

β:A - v etoy komnate? (Ah - in this room?)

α:Konechno...potomu chto eto legche budet...(Of course...so it should be easier (now)...)

β:V etoy komnate rastitelnovo ochen malo...Kofe? (There's not much vegetable in this room...The coffee?)

α:Net. (No.)

β:Chto-zhe zdes eshcho rastitelnoe?...Chernila? (What else vegetable is there here?...The ink?)

α:Net. (No.)

β:Sigarety? (The cigarettes?)

α:Mm.Pachka sigaret,esli mozhno - (Mm.The packet of cigarettes, if you can -)

β:Pachka! (The packet!)

Game 45(Russian)

α: Eto chelovek? (Is it a human being?)

β: Net. (No.)

α: Eto obyekt? (Is it an object?)

β: Obyekt. (An object.)

α: Obyekt...Skazhite - on v etoy komnate? (An object...Tell me - is it in this room?)

β: Net. (No.)

α: V mire? (In the world?)

β: V mire.Dazhe blizhe. (In the world.Even nearer.)

α: V kakoy-to konkretnoy strane? (In some concrete country?)

β: Da. (Yes.)

α: V kakoy-to strane konkretnoy...On v Britanii? (In some concrete country...Is it in Britain?)

β: Da. (Yes.)

α: V Britanii...znachit - chelovek,vy skazali - (In Britain... that means - it's a human being,you said -)

β: Net,net! (No,no!)

α: ...obyekt v Britanii...On nachoditsa v Londone? (...an object in Britain...Is it in London?)

β: Net. (No.)

α: Eto zdanie? (Is it a building?)

β: Ne sovsem.Eto postroeno,no ne zdanie. (Not quite.It's constructed,but not a building.)

α: Eto postroeno no ne zdanie.Skazhite - eto v Shotlandii? (It's constructed but not a building.Tell me - is it in Scotland?)

β: Da. (Yes.)

α: Postroeno - skazhite - eto v Edinburge? (Is it a construction, tell me,in Edinburgh?)

β: Da. (Yes.)

α: Eto starinnoe chto-to postroennoe? (Is it some kind of ancient construction?)

Р: Net. Ne ochen. (No. Not very.)

А: Postroeno - skazhite nu - postroeno eto dla tsarstvuyushchey osoby? (Was it built - tell me now - was it built for a ruler?)

Р: Net. (No.)

А: Eto muzey kakoy-nibud? (Is it some sort of museum?)

Р: Net. Postroeno dla vseh. (No. It was built for everyone.)

А: Postroeno dla vseh - most? (Built for everyone - a bridge?)

Р: Most. Da. Kakoy most? (A bridge. Yes. Which bridge?)

А: Kakoy most? North Bridge? (Which bridge? North Bridge?)

Р: No. (No.)

А: South Bridge? (South Bridge?)

Р: Net. (No.)

А: Znaete, ya nazvaniy vseh etich - ne znayu, no most kotory idyot paralelno North Bridge - vot tam gde-to po sereдине Princes Street. (You know, I don't know the names of all those - , but the bridge which goes parallel to North Bridge - somewhere there around the middle of Princes Street.)

Р: Eto most bolshe chem North or South. On izpolzuetsa v drugich tselach. (It's a bridge bigger than North or South Bridge. It has a different function.)

А: Bolshe? Most? (Bigger? A bridge?)

Р: On ne vnutri goroda... (It's not inside the city...)

А: Ne vnutri goroda... vnutri samogo goroda... (Not inside the city... inside the city itself...)

Р: Ne vnutri goroda. (Not inside the city.)

А: Da, no vidite, ya zatrudnayus potom chto ne znayu nazvaniy etich bolshich mostov v Shotlandii, vne goroda... (Yes, but you see, I'm having trouble because I don't know the names of those big bridges in Scotland, outside the city...)

Р: Da, no dla chevo on mozhet izpolzovatsa yesli on ne dla peshechodov? (Yes, but what could it be used for if not for pedestrians?)

А: Yesli ne dla peshechodov verno tolko dla bolshovo transport-novo dvizhenia. (If not for pedestrians then it can only be

for heavy transport.)

β: Da eshcho? (What else?)

α: Transportno dvizhenia i zheleznodorozhno dvizhenia...
(Transport or railway...)

β: Tak, tak... (Right, right...)

α: Znachit eto bolshoy zheleznodorozhny most. (So it's a big
rail bridge?)

β: Bolshoy zheleznodorozhny most. A nazvanie yevo vy ne znaete?
(A big rail bridge. But don't you know its name?)

α: I ya yevo tozhe ne znala. Tak-zhe. (I didn't know its name
either. Nor that.)

... i on nachoditsa vne goroda, vy skazali... (...and you said
it's outside the city...)

β: Po-moemy, da. (In my opinion, yes.)

α: Nu, vsyo ravno - budete schitat' chto ya yevo otgadala.
(Well, all the same, you can say that I guessed it.)

β: Otgadali. Eto Forth Bridge. (You guessed it. It's the Forth
Bridge.)

Game 46(Russian)

- β: Chelovek? (A human being?)
- α: Ne sovsem. (Not exactly.)
- β: Zver? (A wild animal?)
- α: Nu, znaete - zachem v takuyu kraynost? (Now, look - why (to) to such extremes?)
- Zhivotnoe, zhivotmoe - no pochti chelovek. (Animal, animal - but almost a human being.)
- β: Obezyana? (An ape?)
- α: Nu chto vy - net. Eto chast cheloveka ya by skazala... (Come off it - no. I'd say it's a part of a human being...)
- β: Chast cheloveka... telo? Chast tela cheloveka? (Part of a human being... the body? Part of the human body?)
- α: Chast tela cheloveka. (Part of the human body.)
- β: Chast tela cheloveka... ich ne tak mnogo... dvadtsat voprosov... Noga? (Part of the human body... there are not so many of them... twenty questions... A leg?)
- α: Net. (No.)
- β: Ruka? (An arm?)
- α: Vy sobiraetes v obshche govorit ob etom? - kak chasti tela v obshche? (Are you going to talk all about that? - what parts of the body there are?)
- β: (laughs) Nu ya sobirayus vse chasti tela perechislit. (Well, I shall go through every part of the body.)
- α: Ne mozhet vpast v oshibku! (Impossible to go wrong!)
- β: Golova? (The head?)
- α: Net, ne sovsem. (No. Not quite.)
- β: Ne sovsem golova... (Not quite the head.)
- α: No ochen blizko. (But very close.)
- β: Mozg? (The brain?)
- α: Net. (No.)

β: Blizko golovy byvayut ushi - ushi? (Near the head are
 the ears - ears?)
 α: Net. Ne ushi. (No. Not the ears.)
 β: Mm... Eto telo, eto ne organ, net? Chast tela... (Hm... it's the
 body, not an organ, isn't it? Part of the body...)
 α: Eto teplo, sovsem teplo - potom sovsem zharko... (That's warm,
 very warm - then really hot...)
 β:golova... i esli eto ne ushi no na golove, byvayut eshcho
 nos i rot... (...the head... and if it's not the ears, but on
 head, there are still the nose and the mouth...)
 α: Vy sobirates srazu sprashivat? (Are you going to ask(it)
 right away?)
 β: Nos? (The nose?)
 α: Nos, da. Teper kakoy nos, da? (The nose, yes. Now which nose,
 O.K.?)
 β: Esli nos pravilno eto konets, ili ne konets? (If the nose
 is correct it's the end, or isn't it?)
 α: Eshcho nado otgadat, ochevidno, i chey nos. (You've still
 got to guess whose nose, obviously.)
 β: Nos - yevony?*(laughs) (That bloke's nose?)
 α: Net, ne yevony. (No, not his.)
 β: Moy nos? (My nose?)
 α: Da. (Yes.)

*Pointing at M.F. through studio window (the possessive
 adjective used is highly colloquial)

Game 47(Eskimo)

α:Umasoq. (Animal.)

β:Kalaallit nunaanni uumasuuva? (Does it live in Greenland?)

α:Naamik. (No.)

β:Qallunaat nunaanni? (In Denmark?)

α:Aap. (Yes.)

β:Illumi uumasuuva? (Does it live in a house?)

α:Illumi uumasuunngilaq... ((It)doesn't live in a house...)

β:Orpippassuini uumasuuva? (Does it live in the woods?)

α:Naamik. (No.)

β:Inuk? (A human being?)

α:Inuk.Aap. (A human being,yes.)

β:Kalaaleq? (A Greenlander?)

α:Naamik. (No.)

β:Qallunaaq? (A Dane?)

α:Aap. (Yes.)

β:Immaqa illit?*(You perhaps?)

α:Naamik - uvanga qallunaanngilanga! (No - I'm not a Dane!)

β:Arnaava? (Is it a woman?)

α:Aap. (Yes.)

β:Ulluinnarni atiuva? (Is it a name (heard) everyday?)

α:Aap. (Yes.)

β:Inuk tusaamasaava? (A famous person?)

α:Mm. (Mm.)

β:Atuartartog? (A writer?)

α:Naamik. (No.)

β:...qallunaaq...tusaamasaavoq...Isiginnaartitsisoq? (...a Dane
...famous...An actress?)

α:Naamik. (No.)

β:Uveqarpa? (Does she have a husband?)

α:Aap. (Yes.)

(* α is half Danish)

β:Meeraqarpa? (Does she have any children?)

α:Aap. (Yes.)

β:Københavnimiuva? (Does she live in Copenhagen?)

α:Aap. (Yes.)

β:Qitittoq? (A dancer?)

α:Naamik. (No.)

β:...isikkua...Pualasoq? (...her appearance...Is she fat?)

α:Naamik. (No.)

β:Meera inuusussuuva? (Is her child very young?)

α:Naamik. (No.)

β:Ilinniartitsisoq? (A teacher?)

α:Naamik. (No.)

β:...suna,suna?... (...what is it,what is it?...)

α:Nukappiarai marluk...amma pingaartut ilai... ((She has)
two boys...also important people...)

β:Aa!Dronning Inge - Dronning Margrethe?(laughs) (Ah!Queen
Inge - Queen Margrethe?)

α:Aap! (Yes!)

Game 48

β: This one is mineral.

α: Is it within this room?

β: No.

α: Is it something you would find anywhere?

β: No.

α: Would you normally find it on a street?... Would you normally expect to find it on a street?

β: No.

α: Would you normally expect to find it indoors?

β: No.

α: In the countryside?

β: Possibly.

α: But that wouldn't be the usual place you would find it?

β: ...Yes.

α: Does it exist in water?

β: No.

α: Is it a man-made object?

β: Yes... It exists in the country, but the country could manage without it, and it isn't in water but is connected with water.

α: Would you normally expect to find it on a farm?

β: No.

α: Is it connected with human beings existing in the countryside?

β: Don't get mislaid - I mean misled! - by the countryside.

α: You're talking about the country in general rather than the countryside... or out of town...

β: (laughs) a bit difficult... It's out of Edinburgh.

α: Does it exist by the sea more, normally? or by fresh water?

β: It exists by the sea.

α: Would you expect to see it in a seaside village or town?

β: In a specific seaside village or town, yes.

α: Does the object include the name of a town?

β: Not a town, no.

α: Of a village?

β: No.

α: Is it a bridge?

β: Yes.

α: Close to Edinburgh?

β: Yes.

α: Forth Road Bridge?

β: No.

α: Tay Bridge?

β: No.

α: Within Scotland?

β: Yes.

α: (laughs) I've forgotten what it's called.

β: It's not the Kincardine Bridge.

α: That's the one I was trying to remember!... Is it on the
East coast?

β: Yes. In your questions you've been next door to it.

α: The Forth Rail Bridge?

β: That's it!

P: Animal and vegetable.

A: Sort of animal with vegetable trimmings, that sort of thing?

P: Animal and vegetable.

A: Is the vegetable wood?

P: No.

A: Right. Is it a piece of furniture?

P: No.

A: Is there one in this room?

P: No.

A: Do I or you own one?

P: No.

A: Is it decoration - or decorative?

P: Not principally...

A: Is it bigger than the T.V.?

P: No.

A: Would you like to own one?

P: I wouldn't mind...

A: But I'd like it more...

P: Yes.

A: Is it bigger than my fist?

P: Yes[↑]...

A: Is it consumable?

P: Yes.

A: Is the mineral -

P: I didn't say mineral. Animal and vegetable.

A: Yeah, sorry, I meant vegetable. Is the vegetable some kind of plant? - including does it come from a plant?

P: Yes.

α: And is it only that part that gets consumed?

β: No.

α: Is it edible?

β: Yes.

α: Have I eaten any in the last week?

β: No.

α: Is it something I've eaten in the last year?

β: Yes.

α: Is it something one would eat at a restaurant rather than at home - I mean for us?

β: For us in particular, I suppose so.

α: ...This is difficult...Is it a savoury dish?

β: No.

α: Is it a sweet?

β: Yes. Two left.

α: O.K., let me recap and think out loud a bit. Animal and vegetable; the vegetable - I mean all of it - is consumable...I've had some this year - but not recently, this last week...It's a sweet, not savoury...It's between the size of my fist and the T.V. (laughs) If I eat it I don't suppose that helps much actually!...And it's something we rather tend to eat at a restaurant than at home...A sweet, gosh, I don't eat many sweets...I mean it could either be - let me think out loud a bit - a pie, or an ice-cream, or fruit or - some kind of Italian speciality - zabaglione (laughs)...Wait, that's vegetable, the ice-cream, mineral -

β: You've got two left, come on, stop thinking out loud! You're not going to get it.

α: I'm not going to get it? O.K., is it something that we've had

at friends' at a dinner party and we've talked about afterwards or mentioned?

β: No... I was only saying you wouldn't get it because you only had two left and you were still thinking out loud.

α: Here's my bonus question: is it something you prefer - I mean rather than me?

β: No.

α: O.K., here's my real final question: is it sweets, chocolate or something in that line?

β: Sort of. Right. Twenty one. Finished. Do you want to switch off and carry on guessing?

α: I don't want to switch it off at all.

β: All right. Carry on guessing, but you've had twenty one.

α: O.K. Is it something soft like yoghurt?

β: No.

α: It's hard.

β: It's not hard, but it's not soft like yoghurt... Yoghurt is almost sort of liquid.

α: What I mean is it's not a mousse or anything like that, which is sort of semi-solid. I mean it's harder than -

β: It's harder than mousse.

α: Is it harder than ice-cream when it's really hard?

β: No - you'll kick yourself!

α: ...almost liquid...

β: It's not almost liquid. You said that!

α: No, you said it wasn't solid - you said yoghurt was almost liquid and it's not a solid and it's as liquid as - it's more solid than that... Is it something I - Oh! Clotted cream?

β:No.

α:No...not much mineral in that...

β:Why do you keep on harping on mineral?It's animal and vegetable!

α:O.K.Ice-cream is ruled out - you said before...

β:No.

α:O.K.It's a sweet we've had here once -or at a restaurant perhaps once...Is it something like date and walnut loaf - kind of baked?

β:Yes.

α:Bread?

β:No.It's a sweet.

α:I know,but I can't think of anything you bake!...sweet...I mean is it sweet?I mean you said -

β:Yes!

α:Yes,I know!Right,it must be in that case...shortbread.

β:No.

α:You've never baked anything else!

β:I never said I baked it.

α:...Baked apple?

β:No.

α:Something in an Italian restaurant?

β:You might have had it there - or you might have had it somewhere else...

α:It's not a kind of pie?

β:No.

α:Has it got fruit in it?

β:Some kinds have but that would be misleading.

α: Is it something with cream in it?

β: Yes.

λ: Crumble?

β: No.

λ: Damn it, what kind of sweet is this?

β: It's something so basic and easy you can't think of it. Do you want to give up? Shall I give you a clue?

λ: Yes.

β: Concentrate on the baking - what do you bake normally?

λ: Pies, or Baked Alaska...or...

β: -or?

λ: -cake...?

β: Yes!

(etc.; the object - a particular cake - is not guessed)

Game 50*

Q: Mineral.

P: It's mineral. Is the mineral stone?

Q: Yes.

P: Is it bigger than this building?

Q: No.

P: Is it a landmark?

Q: Yes.

P: Is it in the centre of Edinburgh?

Q: Yes.

P: Can you see it from Princes Street?

Q: No.

P: Can you get inside it?

Q: No.

P: Would you consider it strange if you saw a Japanese man
photographing it?

Q: No.

P: Would you consider it strange if you saw a Japanese man
sitting on top of it?

Q: Yes.

P: Is it located within a hundred yards of the Royal Mile -
any point along the Royal Mile?

Q: No...but quite near.

P: Is it a monument?

Q: Mm...yes.

P: Is it older than a hundred years old?

Q: Uh...I don't think so. It may be...

P: Is it - has it got religious connotations?

Q: Not in the sense you mean.

β: Would it be mentioned in a typical guide to Edinburgh?

α: Yes.

β: The Heart of Midlothian.

α: No... What's that anyway?

β: (laughs) Oh, forget it - it's a spot on the ground near the -
Saint Giles... um, it's made of stone, near the Royal Mile...
Is it bigger than this room?

α: No.

β: Ah!

α: That's fifteen.

β: Fifteen, eh?... Could a Japanese man hide behind it and take
a pee and not be noticed by passers-by?

α: No. (laughs)

β: Oh. Is it higher than - is it taller than the average Japanese man?

α: In itself, no.

You've only got three left.

β: In itself? Wait a minute - in itself?... When you said it
was stone - this is recapping, sort of - you said it was stone -
it's all stone, I presume.

α: Yeah.

β: Therefore when you say 'in itself it's not taller than a
Japanese man', um...

α: That's 'cos it's standing on something.

β: Ah! Thankyou!

α: - which is also stone, actually, but I'm just thinking of
the top bit.

β: Oh, you're thinking of the top bit. Is it something like a
spire?

α:No.

β:Is it more than twenty feet off the ground?

α:~~No~~.You've only got one left.

β:Yeah,I'm going to have to guess...Is it a statue?

α:Mm.

β:Ah,it's a statue!Um,Bobby?

α:Yeah!

β:Pretty good,eh?

Sample Program Output

Interpretation of this output is straight-forward: the first page is typical output from the first stage of OG and is in LISP. The human answerer thinks of an object following the command 'THINK OF AN OBJECT' and answers either 'Y' (for 'yes') or 'N' (for 'no') - or 'CANT-SAY' - following the prompt 'READ:'. The program's questions are LISP atoms with question marks in brackets. The second page is the corresponding output of the second stage.

LISP:(NEWGAME)
(THINK OF AN OBJECT !)

(HUMAN ???)
READ:Y
(WRITER ???)
READ:N
(POLITICIAN ???)
READ:Y
(DEAD ???)
READ:Y
(AMERICAN ???)
READ:N
(CENT20TH ???)
READ:Y
(ASIAN ???)
READ:Y
(MAO ???)
READ:Y
(I GOT IT !!!)

LISP:(NEWGAME)

(THINK OF AN OBJECT !)
(HUMAN ???)
READ:N
(WOOL ???)
READ:N
(BELOWWAIST ???)
READ:Y
(ONFEET ???)
READ:Y
(SHOES ???)
READ:Y
(SHOES BELONGING WRITER ???)
READ:N
(SHOES BELONGING MALE ???)
READ:Y
(SHOES BELONGING EUROPEAN ???)
READ:Y
(SHOES BELONGING BRITISH ???)
READ:Y
(SHOES BELONGING SCOTTISH ???)
READ:Y
(SHOES BELONGING INTHISROOM ???)
READ:Y
(SHOES BELONGING YOU ???)
READ:Y
(I GOT IT !!!)